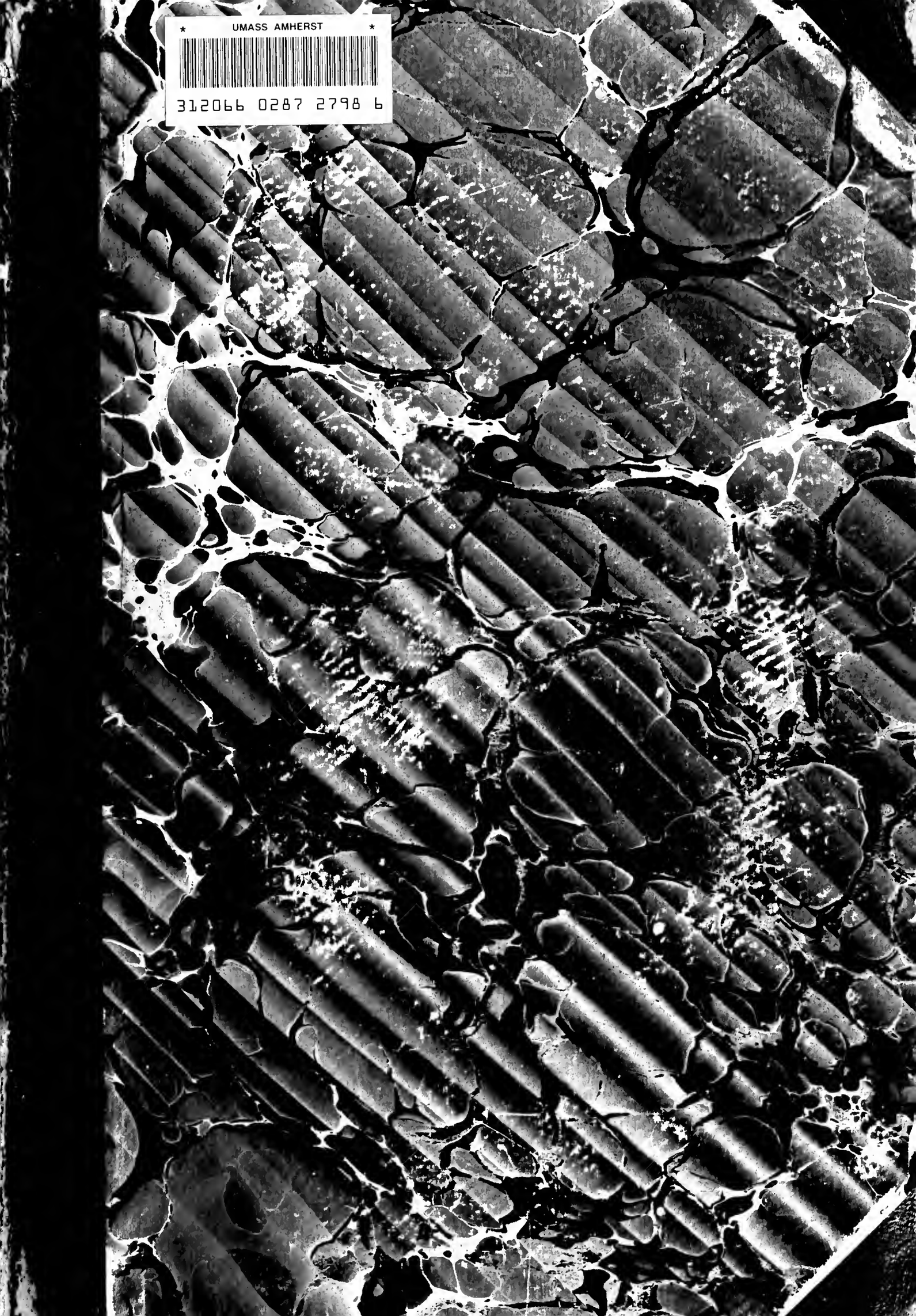
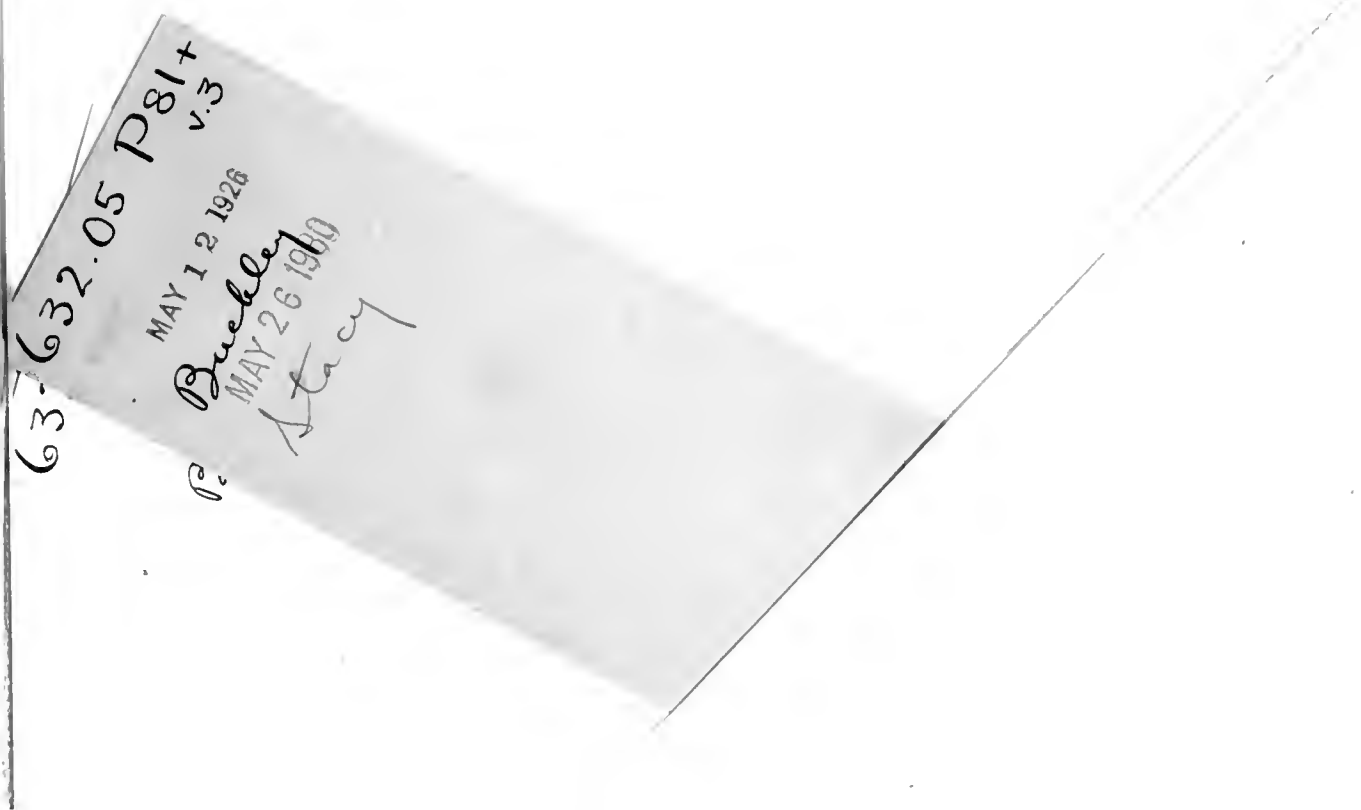




POPULAR GARDENING AND FRUIT GROWING.

AN

ILLUSTRATED PERIODICAL

DEVOTED TO

Horticulture in all its Branches.

CONDUCTED BY

Elias A. Long, Author of "Ornamental Gardening for Americans," "The Home Florist," Etc., Etc.

What wondrous life is this I lead!
Ripe Apples drop about my head;
The luscious clusters of the Vine
Upon my mouth do crush their wine;
The Nectarine, the toothsome Peach,
Into my hands themselves do reach;
Stumbling on Melons, as I pass,
Ensnared on flowers, I fall on grass.

—*Marvell.*

Volume 3, 1887-88.

BUFFALO, N. Y.:
POPULAR GARDENING PUBLISHING CO.

INDEX

TO

VOLUME III OF POPULAR GARDENING.

INDEX.

INDEX.

Q

R

S

T

U

V

W

Y

Z

POPULAR GARDENING

AND FRUIT GROWING.

VOLUME III.

Autumn.

'Tis Autumn by the half-clothed Trees,
And all the land is seeking rest;
The Bluebird, Robin, and the Bees
Are now in quest of winter ease.

The Acorns and the Walnuts fall;
The Milk-weed turns its leaves to gold,
And Thistles nod, and Blue-stems tall
Grow slowly old at Nature's call.

The skies have donned their brightest blue,
And trimmed their robes with fleecy lace;
For Autumn's task is almost through,
And Winter's face appears in view.

Late growth in young Oleanders means no flowers next year; ripen such off gradually now.

The Apple crop of Canada promises to be a good one, there having been little suffering from drought there as compared with many parts of the States.

Lifting and potting plants may make rough hands, but this does no harm. At the same time a little ammonia or borax in the wash water will soften them.

Fruit Storage with a Vengeance. A Brookfield, Pa., correspondent writes that the common mode of storing fruit in his section has been to put it in a warm cellar, bank it up warm, and after the work of decomposition has gone on until spring shovel it up and carry out and dump.

The keynote in the successful arrangement of cut flowers is never to crowd the individual blooms; keep them apart by a backing of moss or Lycopodium between the stems, if the circumstances of the case admit of no other way. A good florist makes his flowers go a great ways.

The Wealthy Apple. The complaint is sometimes made that this is not a good keeper. A grower who claims to have the largest orchard of this variety in New England says that it is only those who put off gathering too long and let the fruit become over-ripe that experience the trouble complained of. He says the Wealthy, and all winter Apples, should be gathered as soon as the skin is colored up and the seeds have turned brown, which with the Wealthy is on or before October 1st.

Gardeners and Florists' Club of Boston. This is an organization of the enterprising florists and gardeners of Boston, and of which W. J. Stewart was the first president. It embraces in the neighborhood of 100 members. Judging by the attendance of members and the character of the proceedings of a meeting which it was the writer's good luck to be present at recently, it is a society destined to have a most useful career, and to be of special benefit to the trade of Boston. A grand flower show to be held in one of the fall months is under contemplation.

Enriching Land. Joseph Harris is reported by an exchange as telling of a farmer who selected a piece of land for a large garden, and prepared it by plowing and sowing Buckwheat in spring, and when this was in flower he plowed it under, and again sowed it with Buckwheat. This second crop was very heavy, but by means of a chain attached to the plow he turned this well under. In September sowed the land to rye, and this he plowed under the next year about the middle of May. The land thus became wonderfully mellow and full of vegetable matter, and by the addition of some manure and phosphate he had a grand piece of ground on which to raise vegetables.

The Moon Flower. Ipomea grandiflora syn. Ipomea noctileuca.

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

From the immense number of this beautiful climber that was distributed last spring in every State and Territory in the Union, there has been created such a widespread interest about it, greater perhaps than that made by any plant ever before introduced, that there is but little doubt that any information that can be obtained about it will be interesting to cultivators.

Last week Mr. Elias A. Long, editor of this magazine, and Mr. Wm. R. Smith, Superintendent of the Botanical Gardens at Washington, met at my place, when the question of the proper botanical name of the Moon Flower came up. Mr. Smith, who perhaps is the highest authority we have in botany here, says that the true Moon Flower is known to botanists as *Calonyction grandiflora*, but admits that the popular name of Ipomea will probably be held in use; but the important point decided by an examination of our specimens was to show wherein it differed from Ipomea Bona Nox, thousands of which have been sold for the Moon Flower the past season, particularly by seedsmen, as that species seeds freely, while the true Moon Flower does not. The difference in the two species is most marked, in that the Ipomea Bona Nox has larger and more cordate leaves, has the calyx darker in color and much shorter, and, above all, the stems are destitute of the embryo roots which cover so completely every twig of the Ipomea grandiflora. Moreover these plants of Ipomea grandiflora on our grounds, planted side by side with the Ipomea Bona Nox on the same day, both plants being trained against the south side of a building and are now thirty feet high, have been covered nightly and on dark days with a perfect sheet of bloom, from the first week in August, while to-day (17th of September) not a flower has yet developed on Ipomea Bona Nox. Whatever it may do in the Southern States, where it has a longer season to grow in, our experiments here show conclusively that the Ipomea Bona Nox is worthless, if flowers are desired, for the Northern States.

I have had hundreds of letters from our customers the past month asking whether the Moon Flower is hardy, and if not, what they shall do with the plants that have made such growth. The Moon Flower is not hardy, in fact, is very tender, and will be killed by the first frost. The large plants could hardly be lifted so that they would live, even if desirable, but no plant roots easier than the true Moon Flower, *Ipomea grandiflora*. Cuttings three or four inches long put in like Geranium slips will root in a week, and should be potted into small pots just as Geraniums or any other house plant; if desired they can be grown to festoon the windows of the sitting-room, or if grown in a greenhouse, where they would get plenty of light, they would flower in winter, but light is essential to their blooming either in winter or summer. With all care the past season we grew in boxes a lot of them on the north side of our seed warehouse in New York; they have grown vigorously to a height of thirty feet, but bloomed very sparingly, while plants set out about the same time on the south side of a building, where they had sunshine all day, are blooming in the greatest abundance yet and have done so for nearly two months. In all cases where the *Ipomea grandiflora*, the true Moon Flower has failed to bloom, it must have been in consequence of its being grown in whole or partial shade.

Fruit Preservation: M. P. Wilder's last Essay on the Subject.

The following matter is from one of the last essays which the late Marshall P. Wilder presented to the Massachusetts Horticult-

ural Society, and as it cannot but prove of timely interest to our readers we reprint this portion here:

"After many years of experience, both with and without ice, I have adopted a house built in a cool, shady aspect, with the door on the north, and with a thoroughly drained and cemented cellar, having small double windows which may be opened or closed at pleasure. In this way I am enabled to keep my late fall and winter Pears until February or March in good condition. Mr. John J. Thomas writes me that in a fruit room of this kind, by admitting air on cold nights, and closing the entrances when warm, he had sound Lawrence Pears in March, and Josephine of Malines in April, and Baldwin Apples in June.

"My late fall and winter fruits, intended for long keeping, are allowed to remain on the trees until frost is apprehended. They are then gathered with great care into bushel boxes, and placed in tiers of boxes six or seven feet high, and covered with boards, on the north side of my fruit house, where they are kept until the ground begins to freeze. They are then removed to the cellar, and there piled up in the same manner, with thin strips of boards or shingles between the boxes, until wanted for use, when the boxes are looked over and the more mature are from time to time taken out. In this way I keep Pears until March or April in perfect condition.

"In regard to use of ice, I would say that where fruits are kept for some months under its influence at a very low temperature they seem to lose much of their flavor; the cellular tissue also seems to have become dry and to have lost its vitality or power to resume the ripening process. Experience proves that, for the common varieties of the Pear, about forty degrees of Fahrenheit is the temperature best suited to hold this process in equilibrium. The proper maturing of fruit thus preserved demands skill and science. Different varieties require different degrees of moisture and heat, according to the firmness of the skin and the texture of the flesh. Thus, some varieties of the Pear will ripen at a low temperature and in a comparatively dry atmosphere, while others are improved by a warm and humid air.

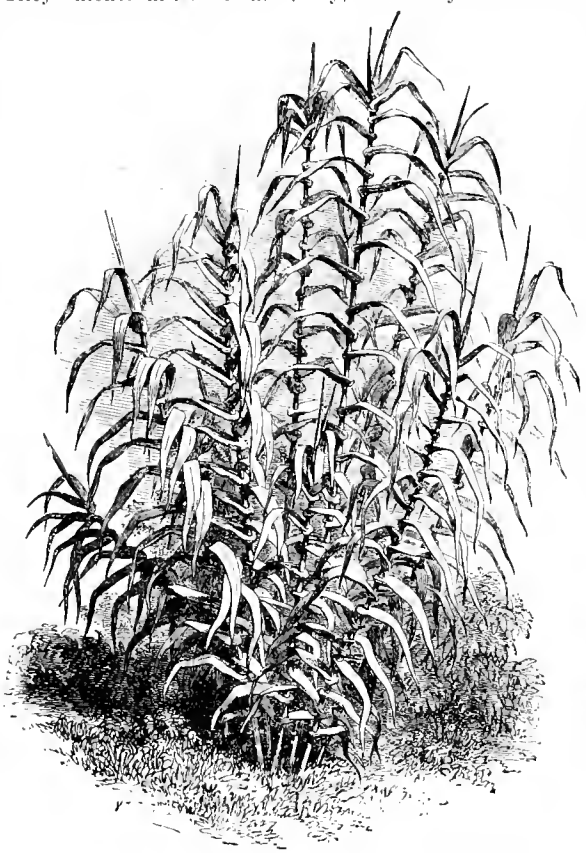
"Mr. S. W. Dorr, of Michigan, constructed a fruit house on the cold air system without the use of ice. He lays down the principle that in order to keep fruit for any length of time the store-room must be frost-proof and kept at a low, even temperature—three or four degrees above freezing—with sufficient ventilation to carry off all moisture and impurities. He was able to keep his house within three degrees above freezing for five months; and when the temperature outside changed sixty degrees in twenty-four hours, the change in the fruit room was imperceptible. Again, when the thermometer fell to points varying from six to twenty degrees below zero, five days in succession, the temperature scarcely changed one degree in the fruit house.

"This result was effected by building a house with triple walls, fifteen inches in thickness, ten inches of which was filled with sawdust.

"One chief condition of success consists in the state in which the fruit goes to the cooler. It should be taken before any sound specimen begins to show ripeness, and no single fruit should be stored that has fallen to the ground; for, however perfect it may seem, sooner or later that dropped fruit will make its presence known, and will often cause the decay of the whole package unless noticed in time, which rarely happens when hundreds of bushels are piled one above another for a month or two. The fruits intended for cold storage houses should go directly from the orchard.

"The cause of so many failures—in storing Pears, for instance,—is that the fruit is often bought of different parties, much of it imperfectly packed, and coming to hand in no condition to go to the cooler; perhaps it has been gathered weeks previously, or carried long distances and become more or less bruised, and rendered in all respects unfit for keeping in this way.

"The after conditions of success may be briefly stated as follows: *The perfect control of temperature, light and moisture;* all experience shows that without such control success cannot be attained. Storage apartments must be dark, dry, uniformly and moderately cool, and constructed so as to exclude at pleasure the variable external atmosphere. Apples may be kept at a lower temperature than Pears—say 34 to 40°.



THE GREAT REED AS AN ORNAMENTAL PLANT.

The Great Reed as an Ornamental Plant.

Our engraving affords a good representation of the strongest growing of all the grasses suitable for ornamental purpose. This is the Reed of Southern Europe, *Arundo Donax*, a plant that in rich soil assumes a height of 10 or 12 feet in a season, and which produces a picturesque tropical effect under cultivation unequaled by any other growth of which we have knowledge. The plant proves to be quite hardy as far north as Buffalo, although in the writer's garden, in common with many other plants, it receives the benefit of a coat of litter over the roots at the approach of winter. We have a notion that all fine plants are deserving of such treatment.

This Arundo is a plant of very easy culture in ordinary soil, provided the soil is well enriched and the plant is supplied with free moisture at the root, for it naturally prefers damp situations. A fine situation for it is at the edge of a lake. But in common culture no better manner of disposing of the plant can be suggested than to set it in a clump on the lawn. Those who employ it here, making the ground deep and rich, will not be disappointed. Like all larged leaved plants it loves shelter from the wind.

Where the making of sub-tropical gardens is carried on there can be no better subject among hardy plants to be employed than this. There is a stateliness in its strong stalks and large glaucous-green arching leaves which gives it a distinct and striking appearance in any collection. It also may be employed with no ill effect as a strong, tall-growing conservatory plant, to be grown in a large pot or box. The plants are propagated by seed or division. Most of the larger growers of hardy plants can furnish roots of this Reed at a very moderate price.

Besides the Great Reed referred to, there is another form of the plant, namely, the Variegated Reed, *A Donax versicolor*. This, although much smaller than the type, has its leaves most distinctly ribboned with white, rendering it very ornamental in fine gardening. It is best suited to warm, free and good soils and abhors clay or an undrained soil. This variety should never be trusted out through the winter without ample protection over the roots. For isolated tufts or groups in a warm part of the garden it is most an excellent plant.

The Variegated Reed is propagated by placing a piece of the stem in water, which induces little plants to start from the joints; these should be cut off, potted up, and kept in a nursing place under glass until well established. Most nurseries that keep the common form for sale also have the Variegated at some advance on the cost of the other.

Hardy Roses as Window Plants.

One of the easiest and yet most satisfactory accomplishments in window gardening is the blooming of some hardy Roses in pots or boxes in March and April, by preparing for the matter now. What is wanted for the purpose is some one or two-year old plants that have been growing outside under cultivation during the past season. These should be carefully lifted during October and placed in pots preparatory to giving them suitable winter care.

In potting the Roses referred to care should be taken to always have the soil well firmed; the soil should be a good loam, and if there is some decayed turf along with it, all the better; avoid sand. The plants should be pruned of about one-third of the length of the branches. Let them stand in a shady place, that is not exposed to the wind, for several weeks after potting, having no fear, however, of frost that is not severe enough to freeze the soil.

After this the plants should be brought to a cool part of the cellar where air can occasionally be admitted to them, or be given a place in a cold pit, until January, after which time the window is the place for them. In forcing, hardy Roses like moderate heat, light and water.

A Good Method of Grafting.

JAMES WORCESTER, MIDDLESEX CO., MASS.

A way of grafting was shown me last winter by an old gentleman, with which I have had great success. It was new to me: it may not be to you, but some reader may like to know of it, hence I send three figures representing something of the process:

One great advantage over splitting the stock is, that the wax can be put on very

thin and the water cannot get into the wood and rot it, as with painstaking there need be no crack.

Select the scion in the ordinary way and instead of cutting the bark on both sides and making a wedge of it, cut on only one side half through the scion and then down and off as shown in Fig. 1. Next, cut off the limb to be grafted, and pare the wound neatly on top so that it will heal over better. Then by inserting a smooth bone wedge,

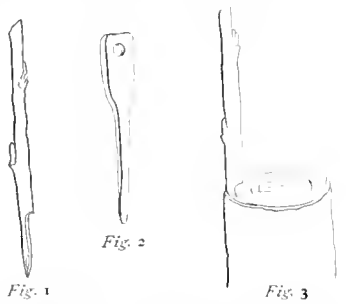


Fig. 1 Fig. 2 Fig. 3

A Good Method of Grafting: Fig. 1, the Scion; Fig. 2, a Bone Wedge; Fig. 3, Graft ready for the Wax.

which is shown in Fig. 2, crowd away the bark from the wood on one side just enough to admit the scion, but not enough to split the bark, and carefully push the scion down to the shoulder with the wood of the scion against the wood of the stock. Should the bark of the stock happen to split, however, it will not matter materially, for the next thing to be done is to cover the top of the stock and the bark back of the scion with grafting wax to exclude air and moisture. This then should be wrapped with a strip of old cotton cloth, which needs merely to be stuck on with grafting wax and not tied.

This way of grafting is so simple and sure that almost any one, even a child of ordinary intelligence, can work over the wild trees on a place with success.

What of the Earlier Flowering Chrysanthemums.

JOHN THORPE, QUEENS, N. Y.

I am pleased to give a list of the best of these. At the same time I fear that there are no early flowering Chrysanthemums that are at all satisfactory or likely to be. What I mean by early are those that flower from July 15th to September 15th. My experience with such has been entirely unsatisfactory.

For six years I have consistently tried this early flowering class. Without exception the flowers all suffer from the excessive heat and are discolored and bedraggled in appearance. The foliage also wilts and is generally covered with black fungus.

There are, however, a few varieties between the 15th of September to October 15th that are presentable, but as a rule the best Chrysanthemums come after the middle of October. The following are the early ones:

Golden Madame Desgrange,—primrose yellow.
Deuil De Pere,—reddish crimson.
Flora,—deep golden yellow.
Frederick Pele,—deep crimson red.
Fiberta,—rich canary yellow.
La Petite Marie,—white.
Lyon,—deep rosy purple.
Mr. W. Piercy,—red.
Mrs. Jas. R. Pitcher,—white.
Rose D'otte,—light rose.
Alex Dufour,—brilliant violet.
Alice Butcher,—red.
Boquet Estival,—deep rosy shade.
Felicite,—changing from orange to yellow.
General Canrobert,—yellow.
La Vierge,—pure white.
Mandarin,—creamy white.
Roi Des. Precoces,—rich crimson.
Soeuo. Melaine,—pure white.

Early Tomatoes for Market.

A. M. S., LICKING CO., OHIO.

Having in 1886 experimented on a small scale with Tomato plants of an early variety, and they proving a success as to earliness when prices ruled high, I concluded this season that if a few vines would pay, more would pay better. So I started enough early to give me one thousand plants after being twice transplanted.

These early plants were cared for in hotbeds until time for setting out in the ground, some of them being in blossom at the time. The result was I had bushels of ripe Tomatoes three weeks before the crop of hot-bed sown plants began to ripen, and they sold readily at from $2.00 to $3.50 per bushel for the main crop, although many were destroyed by rot and hot weather; yet I realized more profit than from the same amount of ground in berries. The berries were nearly gone when the Tomatoes came in for market. The Tomato seems to meet the wants of consumers after they have been supplied with berries for several weeks, and they get out of the producer's way before Tomatoes come in.

We would like to hear through these columns from some of the practical Tomato growers, giving mode of raising early plants prior to setting in the field, marketing, kinds grown and manner of culture.

The Japan Anemones.

Were we restricted to half a dozen hardy garden plants, one of these should be the White Japan Anemone figured herewith, another the rose-colored species, from which the white is thought to have emanated as a sport. The flowers of these plants would prove attractive at any season, but coming as they do in late September and October when flowers are few, they prove exceptionally welcome.

The Japan Anemones possess about every desirable quality of an ideal border flower. The plants are perfectly hardy, succeeding in rich soil with no more attention than Pæonies and similar easily grown things require. They are handsome for their leaves of picturesque ternate and toothed form and deep green color, if never a flower was to be seen. Both varieties are first-rate plants for groups, borders or the wild garden. By having them in various situations, some on the north border and some on a warm one the bloom may be greatly prolonged. The white form, as Mr. Robinson has pointed out, is a most charming plant for occupying a place under shady trees. The flowers are of a fine form, several inches across in size, and well borne above the plants, as can be seen by our engraving. In richness of color and texture the blooms are not excelled by those of any other garden flower; and there is a conspicuous cluster of yellow stamens to each that seems to beautifully set off the flowers.

CLUMP OF THE WHITE JAPAN ANEMONE.

It is supposed by some that the white is the original form of the plant, and with some reason. Various hybrids between this and other species have been raised in England, but none to our knowledge has come up to the Japanese in fineness of flowers,—we may have long to wait for such an one.

By a little management it is easy to have these Anemones in flower as pot plants in the window or conservatory. For this purpose they should be lifted and potted when the buds begin to show, an act requiring no skillful management. In the house they bloom even more handsomely than outside, where they have to contend against the chilliness of Autumn weather. As cut flowers few blooms are more lovely than the Anemones. For this purpose they have the admirable quality of lasting fully a week if they are cut when opening.

Plants of the Anemone can now be procured of all the leading nurserymen and florists. As to propagation, every bit of the root grows when divided.

Advantages of Fall Manuring.

The time of all others in the year which we prefer for applying manure is in the fall, the sooner after October 1 the better. Then we like to see it spread at once, and in the case of cultivated land to set the gang-plow, or if fine enough the harrow, going immediately to work it well into the surface before the ground freezes.

The gain by this course is that the manure is in position to have its soluable parts carried into the soil by the autumn rains, while it is safe from washing or blowing away, as is not the case with manure spread after the ground freezes. During the winter the frost can then also fine the insoluble parts, making them directly available as plant food to give the spring crops a prompt start. But the saving of the strength from winter washing is one of the best points in favor of fall manuring.

Even in the care of lawns and pastures, if fine manure is spread early in autumn it becomes so beaten into the turf as to be secure against washing or blowing away. Something similar to this is true in the case of land plowed or spaded in the rough, over which manure now is spread; it has a chance to settle into the depressions left, and thus is safe from loss and in the best possible shape for mingling with the soil.

As compared with spring manuring the advantages of fall applications, we think, are nearly equal to a double crop. This is reasonable, for in the former case the manure, applied perhaps in dry weather, may lay for the possible lack of rain for a long time in a poorly available shape, when with fall manuring the richness is already distributed just where needed. It is well known that the value of manure is increased in proportion to the earliness of the period when the plants first derive benefit from it.

Notes from a Rochester Fruit Farm.

BY CHAS. A. GREEN.

FALL PLANTING. "Shall I plant plants, vines and trees in fall or spring," I am asked. My reply is plant both in fall and spring.

"But which season is usually most desirable?" My practice has been to plant in the fall if ready at that season, and I make an effort to be ready, for I know there is usually much to be gained thereby. Early spring is one of the most hurried seasons. We wait long for the frost to disappear and the soil to dry, then when the desired moment arrives everything needs attention at once, and as a natural result many things are left undone, and usually it is the planting of fruits that is thus neglected from year to year. But in the fall there is usually several weeks of comparative leisure, when planting can be done with the least possible inconvenience, and the soil is in the best possible condition, neither too wet nor too dry, but fine, crumbling, and easily prepared. Aside from this incentive comes the fact that those who order trees from a distance have a cooler and safer season for shipment, enabling the shipper to send by freight rather than express, thus saving considerable expense. Nurserymen have more time to attend to orders in the fall, can ship more promptly, and have a more complete assortment of varieties. If, through delays that sometimes occur on railroads, freight is delayed in late spring, it is more serious than delays in fall shipment. But the great gain in fall planting is the early growth secured the succeeding spring. This is caused by the plants or trees becoming firmly settled in place, and ready to receive full benefit from the early spring storms, often having formed numerous roots before spring planting would be possible.

While there are many arguments in favor of fall planting, there are some against that season. Trees cannot endure such low temperature after being dug as before digging, hence where the winters are very severe it might be best to heel in the trees until spring, covering roots, trunks and branches, but in New York State such a course is unnecessary with hardy fruits. Another disadvantage is the liability of the frost to heave newly planted plants, vines, and trees. For this reason I do not advise fall planting of Strawberries, unless planted before September 15th. Raspberries, Blackberries, Grape-vines, and trees can be made safe against heaving by throwing a forkful of strawy manure over each plant, or about each tree. Or the trees may be banked a foot high about the trunk.

I often find numerous new roots formed on the trees heeled in during October when removed for planting the next spring. Currants and Gooseberries can hardly be planted early enough in the spring for best results if ordered from a distance. Much of the loss of planting is caused by planting too late in the spring. As I intimated on the start, I would plant both fall and spring. Strawberries, Peaches, Apricots, and all half hardy kinds in the spring, and Raspberries, Blackberries, Grapes, Apples, Pears, Plums, and Cherry trees in the fall.

LOW OR HIGH LAND FOR FRUIT. My experience is in favor of upland. I am not afraid even of the hill tops for trees, though they may be too dry for small fruits generally, but not for Grapes. So far as I have observed the high lands give the most productive orchards and berry fields. Low lands are apt to lack drainage, and nothing is more fatal to success than wet feet for trees and plants. Low lands are also subject to late spring frosts, which are a more prolific source of failure in fruiting than many suspect. Low lands are apt to induce a rapid succulent growth not favorable for fruit, nor for longevity. Mucky soils are often totally unsuited for fruit culture. I have often been called upon to assign a reason for the unproductiveness of orchards. In most cases I have found these orchards on low or level land, and never on hill tops. When a boy I planted a field to Apple trees which was so hilly as to be difficult of culture. It was the only lot my father would permit using for the purpose. On some of the knolls the soil was as hard as a road bed, and demanded pickaxe and crowbar to excavate for planting. To-day that orchard is one of the most productive in the country. It began to bear early and has kept bearing, and the Apples are large and free from defects. Necessity here compelled me to plant on the best site on the farm. A friend purchased a farm near Portage Falls, N. Y., partly in the valley and partly on the bluff 200 feet above. He asked my advice about planting, and was told to plant on the bluff and avoid the valley. He considered me a lunatic. "Why the valley is protected, and is by far the warmest spot. No sane man would plant on the exposed bluffs." He planted in the valley and you can imagine with what success. Fall planting should not be attempted on low wet soil, for the plants or trees would be apt to heave out. I would not advise planting on such soil at any season. Some writers assert that Quinces must be planted on low lands, near brooks, etc. I would prefer higher soil even for Quinces. With rich soil and frequent shallow culture they will do better with me on the uplands. And yet there are localities where it is claimed that fruits on low lands do exceedingly well. Such localities are exceptional.

DESTROYING QUACK GRASS. For years I have been studying the question of destroying Quack Grass, June Grass, and Canada Thistles. I have tried plowing in June and summer fallowing, but the roots of June Grass or Quack would not rot, but kept sending out new shoots. Even where not re-plowed until the succeeding spring we found the roots in the same live condition. To-day, September 8, we begin to re-plow the second time after six weeks of cultivating, harrowing and gang plowing, which has destroyed the roots near the surface. After this second plowing we will continue harrowing, cultivating and gang plowing, and in the worst places will plow the third time just as winter opens, leaving the furrows rough. We expect to subdue this soil so as to be able to plant Strawberries, Raspberries, etc., thereon next spring. We manured heavily before first plowing. The subsequent operations have thoroughly mixed the manure, a desirable feature, for manure as ordinarily applied is not half spread, and where left in lumps it does actual injury. We once destroyed a field of Quack by plowing the sod very shallow just as winter approached. No cultivation was given until the next spring, when Potatoes were planted and thorough culture given, the Potatoes being dug early and the soil kept cultivated thereafter. We never fail to destroy the Grasses and Thistles when we plant a field with trees in nursery rows, the frequent culture given giving them no chance to survive. If I were fighting Thistles alone I would simply cultivate the surface of the soil the entire season. I have never known this to fail.

PROPAGATING THE CURRANT. I cut Currant cuttings the latter part of August and plant as soon thereafter as I can get time. The leaves must be stripped off at this season. When I have no time to plant early I tie the cuttings in bunches of 100 each and place in a trench dug as deep as the cuttings are long, setting the bundles of cuttings therein butt end up, leaving two inches space between the bundles, then covering the bundles with loose soil, pressing it down firmly, until the spaces between the bundles are filled and two inches of earth cover the surface—that is, the butts. If this is done in August or early September the cuttings will have calloused and formed numerous roots by winter. They may be left in the trenches until spring, but should be planted very early in the spring. Larger plants are secured by fall planting, which is done as follows: The rows are marked three feet apart after the soil has been carefully prepared, then furrows are plowed in the marks thus made, and the cuttings thrust in so as to leave one bud only above the surface. Then the soil is hoed back into the furrows and trampled down hard. Just before winter we run a shovel plow between the rows, but use care not to cover the cuttings with earth, then draw strawy horse manure and scatter it over the cuttings so as to shade them and prevent heaving by frost. The shovel plow leaves a valley, the center of which the cuttings occupy. Over this only is the manure scattered. In early spring, after freezing weather has passed, the manure is removed. By this method the plants get an early start in the succeeding spring, often growing two feet high the first summer, or nearly as large as ordinary two-year-old plants. Nothing is more easily grown from cuttings than Currants.

Native Plum Talk.

D. B. WIER, LACON, ILL.

The Native Plums I have given very careful study for many years and have met with some very valuable points, which I think will certainly revolutionize the culture of stone fruits. One of these, now proven beyond any doubt, is that in this place a mass of the Native Plums in fruit have exterminated the Plum Curculio. Practically it comes to maturity in none of them, and if, as now seems to be the case, this insect prefers the Native Plums above all others in which to lay its eggs, the great problem is solved.

Last winter I prepared a paper for Prof. Riley's Entomological Bulletin on this subject, which he criticises quite freely, but the facts newly observed here this season prove me right in every particular.

The only secret of having Native Plums in abundance is to have two or more varieties quite near each other for improving the fertilization. They cannot pollenize or fertilize their own flowers, a fact which accounts for the many barren trees standing isolated. The fact seems to be that the pollen (male element) ripens, is blown away and wasted before the stigmas (female organs) are ready to receive it.

Wherever I have had two or more varieties growing quite near each other they fruit every year, and, whenever a variety is growing either as a single tree or all in a thicket of one kind they have rarely matured any fruit. To illustrate, I have had for years numerous trees of the Wild Goose variety growing not near other Plum trees that have never matured any fruit. The same is true of the Miner, except that it has sometimes, but rarely, matured partial crops. Yet these two varieties planted alternating with each other have not failed to mature a crop of plums in seventeen years. The same is true of all other varieties fruited here.

Therefore, to have the Native Plums in abundance plant two or more varieties, the more the better, four to six feet apart in rows, the varieties alternating and the rows 15 to 20 feet apart. If you plant but one variety you will have little or no fruit; if you plant them orchard style from 15 to 25 feet each way you will also have little or no fruit.

The isolated barren Plum trees of the country can all be made to fruit abundantly by top-grafting certain other kinds into their uppermost branches for improving fertiliza-

tion. My plan is to splice graft other kinds on the terminal twigs of their leading branches. Any one who can whittle can do this. With a thin, sharp knife cut off a terminal twig with a sloping, smooth cut upwards, two or three inches from its base, and an inch long. Cut a graft from last season's growth of the kind wanted, three to four inches long, with a downward slope at as near as possible the same angle that the twig was cut. Lay the slopes together with their barks on one side exactly coinciding. Hold with the thumb of left hand, wrap and tie tightly with strong string, afterwards covering the splice with any suitable grafting wax or clay. The Plum must be grafted early, any time in March, or in February South, when the weather is mild, with scions cut in the fall and properly cared for through the winter.

When grafting the Plum and Cherry they are liable to become bark bound immediately below the graft and perish. To remedy this, about the middle of June, if growth is started, cut through the wax, string and bark, and also slit through the outside bark on all sides from the base of the graft downwards. If there is afterwards any swelling seen at the base of the graft it is best to remove all the hard outer bark down to the green bark for several inches below the graft.

The Cherries of the hardy sour families, and Apricots, Peaches and Nectarines, graft freely on the Native Plums, especially of the Chickasaw tribe, but for the North they are best on the hardy Northwestern Plums, and they do better on these everywhere than on any other stock, as well as all the other fruits named above, and Prunus Simoni. All of these can be fruited much farther north on the Plum than on any other stock, also the hardier fine European Plums can be satisfactorily fruited in this way, North or South, if grafted high up.

Nebraska Fruit Notes.

A. M. DANIELS, YORK CO., NEB.

Last winter and spring were the most disastrous on fruit trees, shrubs and vines known in seven years. Many old and tried kinds were injured.

Of Grapes none have stood better than the Worden and Moore's Early. They are doing better with me than the old and reliable Concord. Pocklington and Elvira have also done well, though the fruit on the latter has been scalded badly by our hot sun. Brighton, Jefferson and many other half hardy kinds died to the ground, but most of them started again. None of my Grapes had any protection, not even snow.

The leaves on my Red Dutch and Cherry Currants have commenced to turn, while those of the Victoria hold their dark green foliage and are still growing. I have faith that we can succeed nicely with the Currant. Give them as much care as you would to raise good Corn, and my observation is you will be rewarded with fruit.

Of Raspberries Tyler and Ohio are far ahead of other black caps. Turner and Shaffer's Colossal are the best of the reds on my grounds. There is no other Blackberry for us as good as the Snyder, and no other Dewberry as good as the Lucretia.

As to Plums, all do well. It is as natural for these to grow here as wild Sunflowers.

Among the varieties of Cherries, I have the Early Richmond, English Morello, Olivett, Reine Hortense, Dyehouse, Montgomery and Ostheum. I have the finest rows of the latter that I have ever seen in any state. I have very many of the best varieties of Apples growing, and all are doing well, indeed they could do no better anywhere. As to their fruiting I cannot yet say, but have no reason to believe they will not do well as they get size and age.

Crescent, Downing and Sharpless are my choice in Strawberries. Sweet Chestnuts do well. The Japanese die. Norway and Scotch Pine never fail. White Pine and Norway Spruce hardly do as well.

On Raising Seedling Strawberries.

BY THE ORIGINATOR OF THE JESSIE.

Mr. F. W. Louden, the now well-known originator of new Strawberries, gave an interesting account of his past and present methods of raising seedlings, before a horticultural society of his State some time ago. This we lay before our readers in a somewhat condensed form as follows:

Of the varieties extant thirty years ago I procured some sixty different ones, and from these began to raise seedlings. My plan was to select large berries from each variety in my collection.

The first year after fruiting I sowed the seed from two quarts of berries. This I continued to do for three years, and at the end of five years I had about 100,000 plants in bearing. I was astonished to see the immense variety; no two plants or fruit were alike, and scarcely a family resemblance in the whole patch. I found many very large berries with but few on a plant, and many plants bearing medium or small sized berries. I was not pleased with the result, not having made much progress, yet the yield of fruit had paid expenses.

For a few years I tried the Wilson as mother, crossed with Longworth's Prolific and McAvoy's Superior. Soon after this there began a general boom in seedlings. Upon the advent of the Sharpless we consider a new era in Strawberry culture begun, a very fine, healthy plant, producing a large berry, but non-productive.

Since the large influx of new varieties came in, I can date my success in raising seedlings. I have bought every new kind, feeling at the time that nine out of every ten would prove a failure. The object in view, selecting those free from rust, with size, flavor and color to suit, was to mix their blood with that of my own seedlings, and avoid "breeding in and in"—not merely a whim.

About twenty years ago I changed my method and adopted one more scientific. My aim was to produce a large, very productive berry of fine quality, beautiful color, firm and uniform in size, running large to the last picking, and the plants of strong constitution with a clean, healthy foliage. Claiming to have a berry with all these requisites, I will try and tell how I produced it.

Some blossoms having both sexes (pistil and stamens) in *one* flower are called hermaphrodite or perfect. Some have but the pistils with no stamens; such are termed pistillate. The same laws that govern the animal kingdom rule in the vegetable. In crossing I use a pair of small pointed scissors and a microscope. The manipulations are delicate. Suppose we have a variety that yields a large berry, but lacking productiveness, if a staminate we cut out the stamens, leaving the pistil. Then having selected a sort that we know to be productive, we take a camel's hair brush and collect the pollen from the stamens and apply it to the stigma at the summit of the pistil. If the operation is a success the germ will soon begin to swell and produce a fruit. This fruit contains the seed for the new varieties we are after. Plants raised from these seeds will possess the qualities of one or both of the plants; "blood will tell." After this the plant must be covered to prevent insects from bringing pollen from other flowers.

For the past seven years I have been using a more simple method. I decide upon the parents, selecting twelve plants (two of a variety). Around these I sink twelve 3-inch pots with soil, fastening runners to each pot and watering a few times. Later a shift is made to 8-inch pots. I keep in cellar through the winter, then about the middle of March place close to each other in a hotbed, cover with sash, and air as often as the weather will permit.

My object is to have the plants bloom before the field Strawberries, thus escaping outside pollen. After the berries are half grown I thin out to three to a plant. To make sure that seed is ripe I allow the fruit to decay on the plant.

I sometimes sow the same season about July 1st, but prefer to keep the seed until the next spring. The seed will germinate without frosting. I use eight-inch pots filled with clean, sharp sand, sow the seed from one berry, press it in with the bottom of another pot, water with fine hose, sink the pot in soil in a frame, cover with sash, then shade with lath. By keeping the sand damp, in twelve days the plants will appear. When the leaves are the size of the thumb-nail, they are ready for the open ground.

The land is prepared the same as I would for the regular field crop. I turn the plants out of the pots, and am careful that the roots do not get dried. I have every fibre of root, so lose no plants. I hoe about every ten days. I allow but one runner to each plant to root, and this in the row. At the end of the season every plant will be strong and bear a full crop the next season. I cover with straw for winter protection.

When fruiting I go through the rows every day and write my conclusions on stakes put in the ground close to the fruit. I repeat this daily until the season is over, usually finding about eight per cent extra promising. From these I raise from ten to twenty plants of each. I then prepare a piece of ground long and narrow, set seven plants in a row of each variety, giving each a name. I subject my seedlings to a severe test, which, when completed satisfies me as to what varieties will grow and fruit in any place where the Strawberry has a home.

House Slops for the Garden.

SUSAN POWERS, NORFOLK CO., MASS.

Don't throw slops round the house, or drain them into sink and cess-pool, to taint the house in summer. They are far too valuable on farm or garden.

The proper course is to plug up the sink drain and substitute a cask on wheels to receive all slops, and have them liberally bestowed on all growing trees and shrubs, which can in summer dispose of half a barrel weekly apiece, and will surprise with their growth. The soil should be hollowed about the stem, basin-like, to hold water, else it runs off without reaching the roots.

In dry times empty the tub of suds from washing on the lawn at evening. It is water and fertilizer for both. A Sweet Briar under the dining-room window had a basin in the soil over the roots, and received all the water left in pitchers, waste coffee and tea grounds after each meal. This matter was occasionally forked into the soil; the result of the daily waterings was that the bush grew six times the size of those in the garden.

An old pump in the cess-pool (which holds the writer's slops) with hose to carry the water to the compost heap is invaluable, and all the water can be pumped on the heap, making a lighter job of very disagreeable work, and saving excellent fertilizer.

A new invention is said to filter all house slops, taking out soluble matters for fertilizers, and leaving the water clear enough for use in sprinkling plants or for many manufacturing uses. All solid wastes, whether from closets, or scraps from the kitchen, if not fed to animals, should be composted daily, covered with old sods or common soil and ashes, thus preventing a very common source of disease, while making the most of everything for enriching the land.

WALKS AND JOTTINGS.

BY A. M. PURDY.

APPLES:—THINNING OUT ORCHARDS, EVAPORATING, ETC., CONSIDERED.

"What Apple is that yielding so wonderfully?"

"The Ben Davis, and we wish we had a thousand trees in bearing of that sort. It begins to bear young and yields a crop every year, and, as you see, is very productive."

"Is it a good Apple for use?"

"No, it's a poor eating Apple, but good for cooking after midwinter. We are now evaporating it and it makes the finest white fruit and, too, is so very fair and free from worms that almost every Apple pares and there is scarcely any waste in trimming."

"Your trees are generally bearing well, are they not?"

"Yes; the best crop we have ever had from our orchard. We estimate at least two thousand bushels from about three hundred trees that are in bearing. We gathered from ten Red Astrachan trees about one hundred and twenty bushels."

"Is the crop generally good in York State?"

"It is not. The Baldwin is the great Apple for Western New York—probably more of that sort planted than all others together, and that variety is bearing very lightly, except about here."

"Will you sell your Apples in the barrel?"

"No; we shake them right off and run them through our large evaporators and thus get a better price than we can get by the barrel this fall and save the great expense and labor of picking, as also expense of barreling, etc."

"Would you advise planting Apple orchards?"

"We know of nothing in the long run that pays better. Our trees will net us at least one thousand dollars this year alone, and no farm crop would bring that from the same piece of land in five years, and yet you see we have small fruits among our trees."

"Your trees look very healthy?"

"Yes; and we attribute it to the fact of our having cut out every other tree two years ago. The trees were planted two rods apart and grew together and bore but lightly and we thought we would cut down the whole orchard, but thought first we would try cutting out every other tree. In one year's time a change came over our trees. They used to show that dry, dead appearance by August of each year and this is changed to luxuriant growth, as you now see, and the result has been that last year we had a fair crop and this year the enormous crop you see. It will do to set trees two rods apart, but they must be thinned out by the twelfth year after setting. See those Baldwins, how loaded and what a fine color they have? That's because the sun's rays get into them. You see, too, we have cut out the center limb, making the tree shaped like an umbrella, so that the sun can get in at the top."

"What have you here?"

"German Prunes, and they are a sight to see, too. There are fifty trees and you can judge for yourself as to their bearing qualities, as also large size of the fruit."

"What will you do with them?"

"Evaporate them. The pit is small and meat so thick that they make 10 to 11 pounds to the bushel, and the evaporated fruit always sells high—not less than 18 to 20 cents per pound."

"How about your evaporated Raspberries?"

"We shall have 7,000 to 8,000 pounds and we hope to get 30 cents per pound. The price is now 27 to 28 cents. The Gregg Raspberry certainly is ahead of all other kinds with us for evaporating purposes. It will give more dried fruit to the quart and will sell for 2 cents per pound more. It holds its shape perfectly when dried and pickers can earn more picking them than any other sort. We shall get more of them on our gravelly high ground than all others together."

"Speaking of evaporating, do you do much?"

"We are running four large evaporators here and in an adjacent town and run off about 3,000 to 3,500 pounds every 24 hours."

"Do you bleach your fruit?"

"Certainly. It sells for at least 2 cents per pound more."

"But some say the fruit tastes of sulphur?"

"Bosh, that talk may do for some fine strung sensitive city visitors, but we challenge any person to tell the difference if they did not know what they were eating, and our doctor says all the sulphur they get out of the fruit wouldn't hurt a kitten."

"How many Apples do you run through daily?"

"From 200 to 250 bushels per day, varying with the size of fruit and the weather."

"What is your rule for telling when fruit will be sufficiently dry?"

"Experience is the best guide. In our "Champion" dryers, if fruit is fairly dry when it reaches the first door on lower floor, it will come up all right. If there are a few slices that are not quite cured when they reach the top, by being scraped from racks into piles and coming in contact with the 'chip dried' fruit all will come evenly."

"Do you pack as soon as taken from the dryers?"

"No; we allow them to lay a few hours till they begin to 'sweat' and then pack. It would be impossible to get 50 pounds of fruit when first scraped from the racks into a 50 pound box."

"Do you run all night?"

"Yes. The fruit is pared, cored and bleached through the day and sliced through our slicer through the night, as needed on the racks."

"How often do your racks go on?"

"When the thermometer shows 180 to 210 from 10 to 15 minutes, owing to weather and clearness of atmosphere."

"Is a different course required on windy days than when still?"

"Yes; when windy the cold air slides must be half or two-thirds shut down, but when still all must be raised. To evaporate well give fresh air well heated."

"If your fruit does not come up properly cured what do you do?"

"Take it off and put on one rack the contents at least four such racks and run it in below again, taking it out at first door below.

Newer Varieties of Fruits; Estimates of Value by Leading Pomologists.

REPORT ON DISCUSSION BEFORE AMERICAN POMOLOGICAL SOCIETY, BOSTON, SEPTEMBER 15.

Apples. *Yellow Transparent.* Hoskins of Vermont had begun its culture in 1866. Trees bore in four years, August being its season in Northern Vermont. Good to recommend generally, a good shipper; will keep three weeks if picked when it begins to color. Is little injured by codling moth. There are other Russians closely allied, yet distinct, all of which he calls the Yellow Transparent family. But the Yellow Transparent is the hardiest—an ironclad—and with the same culture, of the same size. Tree is disposed to be dwarf; has known them to bear a bushel each at 6 feet high. Would plant 12x20 feet apart. Thinks it is not long lived; somewhat subject to bark blight. White Transparent is smaller, distinct, as good as the Early Harvest, which cannot be said of the Yellow, but it is good enough for market. Early Harvest is not the hardiest. Lovett of New Jersey: It had fruited in his State; bearing if anything too heavy, the fruit being small. Smith of Wisconsin said: Is very promising so far as tried.

Delaware Winter. Thought by some to be Louver, but New Jersey delegate said not. Lovett had compared closely with Louver from different sections and found difference in shape, foliage and growth. Pomologist Van Deman, of the Department Agriculture, said that while outwardly it resembled Louver, the flesh was yellower, the fruit more flat.

Wealthy. Paul of Massachusetts was very favorably impressed with it on high land. Hoskins of Vermont has grown thousands of bushels. Like Baldwin it is not sound in the trunk, hence should be top grafted, as the latter now is universally in New England. Lyons of Michigan reported some complaints from Wisconsin and Minnesota. Thinks some means must be developed to render more hardy. Hatch of Wisconsin had found it one of four or five that graft successfully on Crab. Observed an element of weakness in winter blight, but with top grafting valuable. Thurlow of Massachusetts would not recommend it while having so many good sorts. Marvin of New York said it was very satisfactory in Northern New York, and hardier than Duchess. A fall rather than winter Apple. Gibbs of Quebec found no weak point in the tree, but it drops its fruit.

McIlan's White. Hatch of Wisconsin says it has in his State made the best record of any one out of 150 varieties, Duchess and other Russian sorts included; is head and shoulders above all others. On rich land it may blight, but not on moderately rich soil. A fall Apple. He is not interested in its sale.

Wallace Howard. President Berckmans: One of the best and handsomest for the South, and he thinks also for North. Minch of New Jersey had found it a beautiful tree and desirable variety.

Red Breitigheimer. Hoskins: An ironclad.

Wolff River. Hoskins of Vermont said it is not ironclad. Hatch of Wisconsin: Hardy in East, but not in West; almost identical with Alexander. Lyons of Michigan said it is so near like Alexander, questions whether it worth special attention. Watrous of Iowa finds it not hardy, fruit much like Alexander. Hoskins of Vermont called attention to fact that Russians run in families.

Fanny. An early Apple. Green of New York had it sent him by Downing and thought it promising. Engle of Pennsylvania pronounced it a fine Apple, deep red, very showy.

Loy was called, but brought forth no report.

Barnc's Striped. Gibbs of Quebec spoke of it as very handsome and of good quality. Imported from England 30 years ago and propagated as Winter St. Lawrence. [Some on exhibition attracted much attention by their beauty.]

Scott's Winter. Gibbs of Quebec pronounced it a good hardy tree, fine size, etc.; knows no other so generally promising. Hoskins of Vermont says keep over to Yellow Transparent and is better for eating in spring than in winter.

Shaw Apple. Shaw of New Haven described it as a September variety, coming in with Gravenstein, fine striped, but more crimson and less acrid than the last named. A free spirey grower. Fruit, medium to large, sub-acid and comparing with Famense.

Salome. Lyon, Michigan: Medium size, fair quality in February. Haight of Geneva: Would put quality yet lower.

Mann. Van Deman, of District of Columbia, reported it too poor for anything.

North Western Greening. Van Deman, of District of Columbia: It looks like Lowell, not so good, fair quality, will sell well in market. Watrous of Iowa advised to go slow as to hardiness.

Jacob's Sweet. Thurlow of Massachusetts reported it as promising to become the best late sweet Apple. Lovett of New Jersey said it was large and handsome, of very fine quality, having a kind of creamy grain.

McIntosh. A delegate who gave the only report called it fine looking but otherwise faulty.

(To be Continued.)

Apple Grafts on Whole or Fractional Roots.

DISCUSSION BY WISCONSIN HORTICULTURAL SOCIETY.

MR. FLOYD.—When I began to grow stock for my own use I experimented on whole, half and fourth roots. Through these I discovered that Nature had made no mistake in growing an Apple root from ten to fifteen inches long the first year of its life; that the office of the upper portion of a root is to throw out brace roots or surface feeders, the lower part to penetrate the sub-soil and feed from below, thus being able to carry on the work of growing and maturing wood and fruit continuously, wet or dry, and its sap is fully charged with material to start the next season's growth.

The advantages that a whole root worked tree has, are the trunks are larger, straighter, with plenty of strong buds from which to form the best possible shaped head. You will never see crotches, one sided, or illy shaped tops; the branches of top and root are quite evenly distributed and uniform in size. I think I can tell trees, varieties with which I am acquainted, worked on whole or fractional roots, as soon as I step into their midst, also those worked on the upper or lower portion of a root.

MR. KELLOGG.—I think Mr. Floyd's experiments of no value tried on but one kind of trees.

MR. PLUMB.—I have selected first, second and third cuts of scions from trees, and I think the question of their growth is simply one of force. Otherwise than this I can see no difference in the relation or form of the roots. The top will eventually give its character to the root.

MR. PHŒNIX.—One time I grafted on root pieces a good deal. I made up my mind that their growth was not so strong and upright as though they had been made on seedling roots. They were more irregular. I do not call them as good trees in the nursery: not as vigorous and first class as those on seedlings. I have tried it thoroughly, taking long roots and making four cuts of them, and between the first and second there was no difference at all, a little against the third and still more against the fourth. Some people say that buds are better than root grafts, but there is no advantage except that you can get a better tree the first year. When you graft ironclads you want them to be below the ground. If

I could have iron-clad stocks every time, I should not fear if the stock came above the ground. I went South with the idea that top worked trees were better than root grafts, but I had to give it up on trial. I am trying the experiment now of picking out the best iron-clad stock I can get to work on and budding grafts on them. The objection: It makes double work. I hope it will be tried by others also.

MR. TUTTLE.—Years ago I used to make but one from a seedling root. Since that time I don't generally make more than two from a root. I can see no difference between the working of the two methods. I grow just as good trees as I ever did when I grafted only from the collar.

MR. PATTEN.—In 1872 and 1873 in the western portion of Wisconsin, as in Iowa, those trees that were not root grafted were lost almost entirely in nurseries three or four years old. The benefits of Mr. Floyd's procedure are more than counterbalanced by the fact that we get better strength from scion growths. We see that the top of certain trees give the form to the tree far more than the root does.

MR. FLOYD.—Mr. Gibb sent some scions to Wauwatosa to be grafted, and he stipulated that they should be collar worked. I know that the lower parts of roots when cut up do not give satisfaction. While the upper ones bring forth a tree, they do not go down deep. I would not undertake to grow trees from the lower parts of the roots, for there would be so many culls in them. There is a good deal of satisfaction in having a strong root below. The scion having so large a feeding power below makes a better and stronger growth. You do not get an even top though. If the roots are uniform in size the trees will be almost as fine as the roots are.

Pruning in the Cold Grapery.

On page 34 of the last volume an article on the Cold Grapery appeared which dealt with the subject up to the training and other after care of young plants. As then promised, we herewith resume our treatment of the same subject as related to the after training of the vines, this paper to be followed by yet another.

THE SHORT SPUR SYSTEM.—This system is given the preference, as being, all things considered, the best for the amateur. By this method we always have young wood, which bears fruit but once and is then cut back to a single bud. The plants are set at four feet apart and a main cane allowed to each root, extending after a few years to the ridge of the grapery. We depend on the side shoots for bearing.

Let us presume that the end of the first season's growth of a strong spring set vine has been reached, and with all of the season's growth confined to a single cane by having pinched the laterals back to one leaf, as in Figure 1 annexed and the main cane at its point in September. Then in the autumn, about December 1 or earlier, all the laterals should be taken off and the leader shortened back to three or four feet according to its strength, and be laid on the ground and protected with mats or any similar material for the winter.

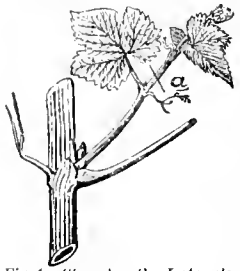


Fig. 1. Stopping the Laterals at one leaf, a.

About April of the following spring, or as soon as the buds begin to swell, the vine should be uncovered and within a few days be again tied to the wire. This new length should, in September, have its end pinched to strengthen the lateral buds, and then at the pruning time in the following December in turn be headed back to within three or four feet of the previous year's growth. A similar course should be pursued with each subsequent season's growth until the top of the house is reached and the vine is complete. The side shoots, which will proceed from the previous season's growth of the cane, should be pinched when they have made their fifth leaf, and if the vine is strong a bunch of Grapes may be allowed to each shoot. Any laterals that form on these canes or the young canes above should be stopped at one leaf, as shown in figure 1.

The subsequent management of the vine on this close pruning system will be simply repetitional of what we now have had an introduction to, that is, the vine will bear its crop of fruit from the shoots proceeding from the spurs, and the bearing wood as well as the laterals must at the next pruning in be cut back to a single bud.

In order that the importance of this close pruning may be rightly understood attention is called to the figures annexed. Figure 2 is a vine cane showing its spurs, the lower one of which shows proper pruning, the upper not. The lower part of Figure 3 shows a badly pruned spur of the second year's growth; the upper part, *b*, a spur of the same age in proper shape. The one thing to be kept in mind is to prune every year to a single bud, thus keeping the young growth near home; if this is not done the spurs become unsightly and have to be renewed, as at *a*, Figure 3. Some growers seem to fear this close pruning as if it would endanger the next year's crop, but if the wood is properly ripened there need be no fear of this, as it is a usual thing for the fruit of the lowest buds to be the finest.

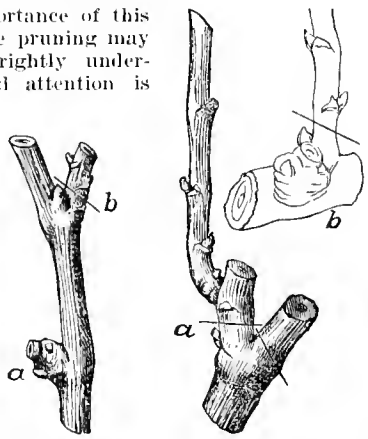


Fig. 2. Vine Cane, lower Spur of which was properly close-pruned, the upper not.

Fig. 3. Second year's growth, lower cut showing a badly pruned spur, the upper one, b, properly cut.

SHORT SPUR PRUNING, GOOD AND BAD.

By keeping the spurs close they will in time throw out from one to three shoots each, the strongest and best placed of which should be selected for fruiting; the others may be rubbed off, or sometimes one may be pinched back to one leaf to form the base of a new spur and then eventually the old one can be dispensed with.

LONG OR RENEWAL PRUNING.—This consists in annually providing a fresh supply of young branches from which bearing shoots proceed, cutting out all the branches that have borne the previous season. While requiring less pruning than the former method, it is not so easily made successful by amateurs, and the fruit is rather less freely produced, but is usually of better quality.

The first season one shoot only is allowed to grow from each plant, and this at fall pruning time is cut down to the third bud.

The year following two shoots are trained up, of which the strongest is chosen as the fruiting cane of the year to follow. This one is cut back to about three feet in December, and the others to a single eye. Each eye of the three-foot cane will produce a fruit shoot the next season, on which a single bunch only should be allowed, while from the single remaining eye of the other shoot referred to a cane should be grown for next season's bearing. As the vine increases in age and strength, several bearing canes, and these stronger, may be provided each season.

Grouping Trees and Shrubs.

L. B. PIERCE, SUMMIT CO., O.

In planting most grounds it is best to so arrange the position of the group as to take advantage of some natural background if possible, as a high hill or bluff, a piece of forest, an orchard, or trees already planted. Where backgrounds of this character are to be had, attention should be paid to the color and blooming qualities of the trees or shrubs rather than to sky outline.

Old places many years planted can often be rejuvenated and greatly improved by cutting out the interior planting and using the trees upon the outer edges as a background for the new. Unsightly stems and undesirable views beneath grown trees can in this way be hidden by a growth, which, if planted in harmony with what is beyond, will each year be more beautiful and attractive.

In the planting of new places where there is only the buildings, the sky and the ground to consider, charming effects of sky outline can be aimed at, and such effects can be most easily reached by close planting. Of course the minor branches will become dwarfed, and intermingling sooner or later die, but being hidden from sight this is immaterial; the outline is what is wanted. To this we can add contrast or symphony in color as we choose. A group once commenced, if properly placed, can be added to from year to year, as time goes on, with great satisfaction, and in better accord with Nature's methods.

The usual plan of planting groups is to place in the center a very rapid growing tree, as a Norway Spruce or Silver Maple, placing slower growers in front or around. This results in an immediate effect of both sky line and difference in size, but eventually the quick growing trees envelop the slow ones, and all that was aimed at is lost. A marked and curious instance of the kind exists within a few feet of where I write. Two trees of an Evergreen group are an American Arbor Vitæ and a Siberian, planted at the same time, about five feet apart, some 17 years ago. Now the former projects above, and on either side of the latter forming a gothic doorway, of which the dark green foliage of the Siberian forms the door. The effect is unique, but different from that originally intended. It may be remarked in passing, however, that the life of an Evergreen group is only about 20 years; when having passed its greatest beauty it should be cleared away and another one started.

With a practical suggestion I will close. A man owns a lot fronted by the universal row of sidewalk Maples. Being the owner of a lot he will be deemed the legitimate prey of the plate-hook tribe, and sooner or later he will buy a cut-leaved Birch, an Althea, a Snowball and a Syringa. Instead of scattering these promiscuously around the lawn, let him make one or two Maples near the corner of the yard a background for the Birch and Beech, then toward the house from these he can plant the three tall shrubs, and when the agent comes along who has a Rose Weigelia, a hardy Hydrangea and a Golden Spirea, he can add these to his group, and finally taper off with a group of Chinese Peonies and Deutzia Gracilis.

These will be in sight at once, forming a pleasing view all through the growing season, and leaving a beautiful foreground of uninterrupted lawn, easy to mow and gratifying to the eye. Of course other trees can be substituted, only observe the principle of placing the largest farthest away.

422. **Bone Manure for Fruit Trees.** I would use this in planting. Thoroughly mix a quart with the soil that is placed about the roots of the plant. More can be used if it is at hand. For trees that have been planted a year or so I would prefer well decayed stable manure, to be applied generously and well worked in around the trees at any convenient opportunity.—C.E.P.

THE COMPLETE GARDEN.

X.

BY A WELL-KNOWN HORTICULTURIST.

Continued from the September Number.

ENCLOSING THE GARDEN: DIVIDING ITS PARTS.

Along with the improved highway laws in most parts, forbiding live stock to run at large, the need of fences or like barriers at the street front is less obvious than formerly. The same is true on most farms and gardens concerning division fences, a result mainly due to that improved form of live stock management which relies on soiling instead of pasturage for feed.

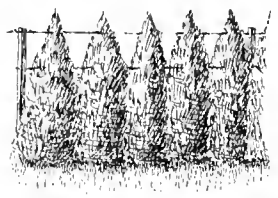


Fig. 32. Hedge fortified with Cable Thorn Wire.

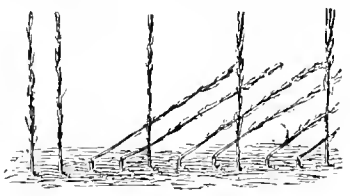


Fig. 33. The Plashing System of hedge making.

But that a complete garden should be entirely without boundary or division fences I suppose no one would claim. What it is desired here to call attention to as especially appropriate to the garden in this line is the use of hedges or other live screens. Such are, both on account of their beauty and utility, well in accord with the idea of gardening. Even though a street fence may not be deemed a necessity for turning away cattle, yet to have the garden protected at the front by a good defensive hedge is desirable enough. It will make the careful owner feel easy against the intrusion of occasional stray animals, which it is well always to count upon, and of dogs, truant children, fruit thieves, etc., while the hedge will serve as a line between the well kept interior grounds and the less perfectly cared for roadside beyond. So of boundary barriers and interior divisions for separating the ornamental, fruit, vegetable and other parts, here hedges of evergreens or shrubs, or screens of climbers, serve to add a degree of peculiar beauty and interest to the garden not otherwise attainable. They also have a valuable use in breaking off any long and uninteresting scenery in the place.

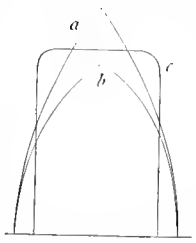


Fig. 34. Various forms of hedges, a and b being the preferable ones.

EVERGREEN HEDGES. Among evergreen hedge trees the writer is satisfied that few are equal to, while none excel, the well-known Norway Spruce for hedge purposes. Next to this excellent tree I would place the Hemlock and the American Arbor Vitæ. In planting I treat the trees as to distance apart and pruning according to the ultimate size desired. For a fine low hedge to be three to four feet in height, and five feet ultimately, the plants are put into well prepared soil in a straight line, and at a distance no more than twenty inches apart. By an annual pruning then of the young tender growth in the early summer there is no difficulty in so controlling the size that an advance in height of not above from one to two inches per year need be allowed. If a screen eight to twelve feet in height is wanted, the planting should be farther apart, say at four feet in the line.

While evergreen hedges, unlike various deciduous ones, are without thorns, hence naturally less effective in turning off intruders, it is easy, as shown by Figure 32 annexed, to unite several lines of cable thorn fencing material with the evergreens for forming a perfectly defensive barrier. This is done by setting strong oak stakes (not posts) at a distance of 16 feet apart along the line soon after the trees are set, and upon which to attach two or three coils of the wire referred to. After some years the stakes will decay at the ground, but by this time the wires and stakes will have become so interwoven with the branches that the footing of the former is of no consequence. The same plan is applicable to any deciduous plants that may be lacking in thorny qualities.

DECIDUOUS HEDGES. Of strong-growing hedge trees, which, without any pruning or crowding will in time form trees, may be mentioned the Honey Locust, *Gleditchia triacanthos;* Osage Orange, *Maclura aurantica.* While these as a class are neither as handsome or tractable as the shrubby kinds to be mentioned further on, they possess because of their stronger growth some advantages where a formidable barrier is needed.

In the culture of strong hedges mistakes are often made by not giving the plants the required attention in the first year's growth for providing a good basis for a close, permanent line. The soil for a hedge should be in a good condition for raising any crop. The plants should for a number of years be cultivated as one would care for a row of potatoes or corn. In planting, good plants should be chosen, and if these vary in size, they should be sorted to bring those of the same strength together. Plant in a single row at one foot or a little less apart, first pruning the tops back to about two inches above the collar. General directions for further pruning might thus be stated: Cut back the plants at one year from planting to within six inches of the last year's place of cutting, and the second spring cut again to about nine or twelve inches from the former cut. After this if the growth be good the hedge may be allowed to advance from six to twelve inches a year, until it reaches the desired height.

Some growers of the Honey Locust allow the plants to grow two years before pruning, then cutting down to within three inches of the ground. This causes numerous shoots to start up below the cut with the effect of making a well formed and in a degree complete barrier shortly afterwards.

A course of treatment which has been adopted largely in the Western States, with the Osage Orange and some others for early forming a strong hedge is illustrated in Figure 33. The trees are allowed to grow upright for a few years, removing a part of the side branches to cause a strong, upright growth. They are then cut half off at the surface of the earth, with the exception of some trees, to be about four or five feet apart. The cut trees are bent at an angle of near thirty degrees, being here interwoven with and tied to the upright ones, to form a straight line. The row is then evenly trimmed off at the top at a height of about three feet from the ground. Directly upon this treatment, which should be done in early spring, many new shoots start up from the stumps and sides to the forming of an impenetrable growth. In after years the tops are annually cut back to within a few inches of the last place of cutting.

Of the deciduous kinds named, the Osage Orange, being a native of Arkansas and Missouri, is less hardy and reliable in the North than the others. The Honey Locust is perfectly hardy, but without regular pruning is liable to assume a coarse appearance. The Buckthorn, while it has the advantages of hardiness, easy propagation by seed, an abundance of fine roots, permitting transplanting with hardly a chance of loss, and has a naturally thick and hedgy growth, still the growth, unless it be in rich land, is not such as to make as formidable a barrier as either of the others named. But by employing the method illustrated by Figure 32 this objection may in the main be overcome.

SHRUB HEDGES. It is in the line of shrubby plants in which is to be found the best material for the small, ornamental deciduous hedges that would most often be found desirable about gardens. In this class we would place the various Privets, *Ligustum;* several of the Barberries, *Berberis;* Japan Quince, *Pyrus (syn. Cydonia) Japonica;* Thorns, *Crataegus;* Weigelias, Mock Oranges, *Philadelphus;* Spireas, Deutzias, and other vigorous, dense-growing flowering shrubs. Some Evergreens might be brought into this same class as to size, namely the Box, Mahonia, dwarf Spruces, Firs, Arbor Vitæs, and Pines.

The management of the shrub hedges is even more simple than that of the stronger growing sorts before mentioned, for the reason that their natural growth is close and hedge-like. Among those named the Privet has the advantage of bearing the shears better, hence is more easily shaped into any desired form than the others. Most of the latter, however, are so tractable and so handsome both in foliage and flowers, that their use should become very general.

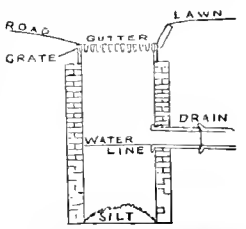


Fig. 36. Silt basin connection between road gutter and drain.

PRUNING. As to form, it should be understood that some shapes are better than others. In Figure 34 are shown several cross sections of hedges, of which *a* and *b* are the best, because they most nearly approach the natural style of growth. Were these forms more rounded at the top no great objection could be raised, while for the sake of variety such might be desirable. The advantage of the forms which are broad at the base, as compared with that of C, is that the sun and light can reach and penetrate all parts of the former about equally, with important benefit to health and vigor.

The time of pruning a hedge has its peculiar effects on growth. To prune early in the spring, before the buds start, limits the growth of the season to the remaining eyes of the shoots, with the effect of inviting a vigorous growth in those, and the earlier forming of a barrier. Pruning the young, tender growth in the summer, on the contrary, checks or retards the growth. After a hedge has become established, therefore by making the early summer season the main pruning time, following it by several successive shearings later on, the work is not only easier done than in hard wood pruning, but the hedge is confined to a more limited degree of growth, just as one would most desire. In the flowering kinds the first summer pruning may follow closely upon the season's crop of bloom. But under any circumstances some cutting back with the knife, in order to admit air and light the more freely back of the surface, is a good practice to pursue.

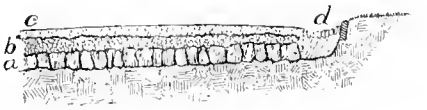


Fig. 35. Section of the Telford Garden Road, a large stones, b broken stones, c gravel, d gutter.

WALKS AND DRIVES.

In gardens which possess dry and gravelly soils, a carriage-way consisting of the natural soil will answer very well. Or in case the soil is a kind that inclines to mud, it may be covered with some inches in depth of gravel for making a firm and agreeable surface. The matter of walks is also, for the average garden, a more simple one than some books would lead us to suppose. Provided the land is in that thoroughly drained state which should mark every good garden, the making of ordinary walks may be reduced to the simple idea suggested above concerning carriage-drives. A few inches in depth of fine gravel that will by rolling combine into a firm body, and with the surface at the sides about an inch below the line of the lawn, and the center slightly rounded over, and about every requirement of a good ordinary garden walk is provided. But that a more thoroughly made walk or drive would, cost aside, possess advantages over the cheaper one suggested no one would think of denying, hence some attention will be given to the making of the latter.

What is known as the Telford road, a cross-section of which is partially represented in Fig. 35, is undoubtedly the best style of garden road or walk that can be made, and with variations is suited to almost every case of road making. Beginning with an excavation of earth from one to two feet below the ordinary surface, the lowest layer of road material, consisting of good sized stones, is first brought into place. This in the figure is shown at *a*. To insure no irregularity in the roadway from later settling, the stones should be set regularly together much as in street paving. On these large stones is to be brought a heavy layer of stones (*b* in the engraving), broken to the average size of hen's eggs, spreading these for presenting rather an uneven surface. Upon this layer is to come an upper and finishing coat of fine gravel, (*c*), which by heavy rolling should be reduced to a firm body and smooth surface. The edge of the walk or drive against the grass should be defined by a line of coping stones, and next to this on each side there should be a gutter, as shown at *d*. This gutter should not be faced with gravel after the manner of the regular surface, but should be paved with stone to prevent washing out by heavy rains.

In grounds that are properly drained there is little need of providing special underdrains to walks and drives. Whenever these may seem necessary they are readily provided by laying one or two lines of about four inch tile in the bottom of the excavation before the stones are filled in, making connections at suitable points with the drain system of the place.

The matter of surface drainage, for the escape of the water that accumulates and flows in the gutters, is rather important in walks and drives of every character. Such water should be disposed of by constructing silt basin connections with the underdrains of the place here and there at the lowest places on the line of the gutters for effecting its escape. The cross section of a silt basin in position, and with proper drain connections, is shown in Fig. 36. A square or circular brick-lined basin about a foot and one-half across and three feet deep is built under the gutter, with a movable iron grate at the top. This is tapped by a drain about half way down its side. In the space below the water line the silt may accumulate without danger of clogging the drain, and by occasionally lifting the grate this can without difficulty be scooped out.

In some cases stone, asphaltum or plank, would be preferred to gravel notwithstanding their greater expense. As these are usually put down by those regularly in the trade of supplying them, no directions for this purpose will here be needed.

(To be continued.)

Abutilons for Winter Flowering.

Among flowering pot plants there are perhaps none which for ease of culture and profuseness of bloom over a long season excel the Abutilons or Indian Mallows. Then their distinctness from the general run of winter flowering plants, both as to appearance of the large leaves and the drooping flowers of various colors, is another point in their favor. Their value in the window garden no less than in the summer garden is also widely recognized.

GROUP OF ABUTILON FLOWERS.

The plants of the Abutilon grow rapidly, and having a largely developed root system, require frequent shifting into larger pots to induce a continuous growth, for it must be constantly borne in mind that flowers are only produced by plants in an active state of growth. A good rich soil is also an essential to the best results, and the assistance of manure-water to the growing plants is at times desirable. A temperature of 50 to 55 degrees is the most suitable one for the plants and these should be kept as near the glass as possible, to keep the foliage healthy and the plants from being drawn.

In the matter of training, some cultivators prefer plants confined to a single stem, and the neat cylindrical outline of plants grown in that manner is not devoid of attractiveness. They are well suited for table decoration in that form, and, although there is never a profusion of flowers at any one time, the succession produced constitutes a special redeeming feature of this deficiency.

Some of the more free pendulous kinds are specially adapted as pillar and roof plants in the greenhouse, under which condition the gracefully-drooping bells show to the best possible advantage. Many years ago we remember the old A. striatum trained along the roof of a conservatory, where it was always much admired and was seldom out of bloom, and now that there are so many hybrids of much improved character, there ought to be no lack of varieties suitable for such purposes.

The well-known white kind, Boule de Neige, as a pillar plant, unfortunately is a little stiff, but is admirably adapted for covering a trellis or wall. When grown in this way it requires annual pruning in, so as to get plenty of fresh, young breastwood, on which the blooms are formed; but the first thing of all is to get it to fill its allotted space, by encouraging the leading shoots to reach the trellis before being stopped, when by nipping out the buds they soon break and furnish the bare parts below. A. vexillarium is one of the best with which we are acquainted for training up under a girder or roof, where if the house it is in happens to be a little warm it will flower the whole year through.

If bushy plants are considered most desirable, they should be pinched back several times as soon as they have taken to the soil and recommenced growing after their transference from the cutting pots. Of course, under such a system of treatment, they will require to be rooted earlier for winter flowering than where they are allowed to run up unchecked, and may be treated accordingly.

REPLIES TO INQUIRIES.

419. **Currant Worm Remedy.** I know of nothing better than hellebore. Are you certain that it injured the leaves? It should be applied while the worms are yet small, and then there will be no occasion for using it in such quantities as to destroy the foliage.—C. E. P.

420, 438. **Moon Flower.** I think that Ipomea noctiphiton is a perennial plant. At any rate it can be treated as one. Trim back, lift and repot carefully, and winter in an average temperature of 55 degrees. In potting use ordinary potting soil, a pot proportionate to the size of the plant, and water carefully until growth commences. Place the plant in a light, sunny situation and use it as a climbing vine for the greenhouse or window garden.—C. E. P. [See also Peter Henderson's article elsewhere in this edition.—ED.]

417. **Cauliflowers Not Heading.** I think that you are cultivating some inferior varieties, or else procured cheap seed. Nothing can be done to make them head. Another season try Henderson's Early Snowball, Early Erfurt, Thorburn's Nonpareil, and procure the very best seed regardless of cost. Cheap Cauliflower seed is not worth planting.—C. E. P.

418 **Sheldon Pear Cracking.** I do not think any thing can be done to prevent the cracking of the fruit, but before destroying the tree I would remove the soil, and for a year or two cultivate it as before.—CHAS. E. PARNELL.

414. **Grape Rot.** Bagging will prevent if applied as soon as the berries commence to develop. Mosquito netting will not answer.—C. E. P.

415. **Transplanting Walnuts.** Transplant as early in the spring as possible. Don't prune the roots, but trim the tops into shape.—C. E. P.

416. **Grapes in Northeast Iowa.** (*a.*) The best time to plant is as early in spring as possible. (*b.*) Would recommend Concord, Diana, and for a white variety it would be well to give the Niagara or Pocklington a trial.—C. E. P.

413. **Gooseberries and Currants.** These are best increased by cuttings prepared and treated as follows: About the end of October select the strongest and straightest young shoots of the current season's growth, carefully cut out or rub off all the buds that you intend to grow below the ground and plant them in a nicely prepared, deep, moderately enriched, shaded border, one on the north side of a fence being preferred. Place them in rows six inches apart, the cuttings being three inches apart in the row. Insert them as deep as possible, allowing only three or four inches to remain above the surface of the ground. Press the soil very firmly about the cuttings, and protect during the winter with evergreen branches. The next season keep them clean and from weeds, and the ensuing spring they can be removed to where it is intended they should remain.—CHAS. E. PARNELL, *Queens, L. I.*

427. **Keeping Grape Seed.** Mix with dry sand and place in a dry, cool situation until wanted. Guard against rats and mice. Sow as early in the spring as possible. Your failure no doubt was in permitting the roots to become too much exposed to the sun and wind while planting, or else the work was improperly performed.—C. E. P.

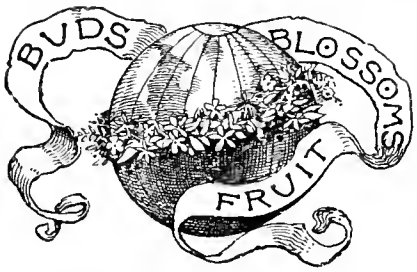
A Lost Summer.

We scarce could tell the hour sweet Summer died,
Nature told on her rosary of flowers;
Pale Lily, Rose and purple Pansies died,
And birds still sang as in Spring's banished hours.
But yet we know that Summer's soul has fled;
That requiem winds in murmurs hoarse and rude
Would chant above the grave of flowrets dead,
And strew with leaves the haunted solitude.
—*J. H. G.*

"Ragged Sailors."

Reddest Roses, bluest Pansies—
No such posies Betty fancies.
"Ragged Sailors" she loves best.
What's the reason, Betty West?
"'Cause they're ragged as can be;
Wear old dresses just like me!
"Poor old Sailors, darlin' posies!
We don't go with dressed-up Roses."
—*Wide Awake.*

Within the solemn woods of Ash deep crimsoned,
And silvery Beech, and Maple yellow-leaved,
There Autumn, like a faint old man, sits down
By the wayside a-weary.
—*Longfellow.*



Air the winter plants freely.

October for surface manuring.

Bruises in fruit hastens decay.

Shallow bins are safest against rot.

Ferns are not much subject to insects.

Hyacinths succeed well in hanging baskets.

What this journal needs is more subscribers.

The fall winds are always blowing about something.

Let us have more notes of experience from readers.

It is a mistake to think that ferneries need no drainage.

A Pear tree at Danvers, Mass., is more than 250 years old.

Kansas has a 436 acre Apple orchard, owned by Judge P. Wellhouse, of Fairmont.

Will our friends see to it that this journal's subscription list is doubled by January next?

A Rule for the Florist: Comparative dryness is favorable to flowering; moisture to growth.

Frequent hilling, the Gardener's Monthly says, is the golden rule in successful Celery culture.

The Adiantums and some other fine Ferns are often injured by wetting the foliage without the real cause being surmised.

Mountain Ash berries may be cured for winter decoration by tying in bunches and hanging these with the berries down.

The idea of nurse trees, that is, trees of free growth set among young trees, and to be later removed, is worthy of more attention.

In watering bulbous plants bear in mind that the bulb itself takes up no water; but the roots only, and these are mainly at the pot's edge.

The Point of View. Some people are always finding fault with Nature for putting thorns on Roses, but I always thank her for having put Roses on thorns.—*Bryant.*

By loosely turning over patches of the worst weeds, like Quack Grass and Canada Thistles, so late in the fall that the roots cannot take a new hold they will often get winter killed.

The watering of Amaryllis should keep pace with their growth, excepting the evergreen species, which may receive an occasional touch of water even during the season of rest.

Winter Blooming Fuchsias. I find that in addition to Speciosa and Serratifolia, Earl of Beaconsfield and Storm King (Frau Emma Topfer) are also excellent. Last winter the latter variety bloomed continuously with me, and being double makes it doubly valuable. Black Prince is also a very early spring flower with me.—*Mansfield Milton, Youngstown, Ohio.*

An Improved Watering Can. What is known as the Jubilee Watering Can in England is shown figured on this page. In shape it differs materially from the ordinary form. That this can possesses certain advantages we have no doubt. Those who have used it sum up its advantages as follows: Easier to carry, easier to tip, and there is little chance of slopping.

The Glass Cannot Slip. Messrs. H. W. Eames & Co., of Milford, Mass., seem to have developed a good idea in their twin glazier points shown illustrated opposite. Every florist understands the difficulty of glass slipping, which these aim to overcome. From a long experience with glass structures, we cannot but think well of such a device. For driving the tacks a special tool is used, and this is also shown in the engraving. The device has been patented.

John B. Moore. This well-known horticulturist died at his home in Concord, Mass., on Sunday, August 21, aged 70 years. He has long been prominent as a horticulturist and originator of improved varieties, among which are numbered the Moore's Early Grape and Moore's Early Corn. Grapes and Hardy Roses were his especial favorites, and his Hybrid Perpetual Roses have long been known as among the best coming to Boston. He was president of the Massachusetts Horticultural Society for several terms.

Value of Deep Cultivation. The excellent notes in the Complete Garden serial last month on this subject leads me to tell some of my experience with an Onion crop that followed Celery: Two rows were just over last year's Celery trench and three over the intervening space left comparatively unbroken. The two rows over the trench are far ahead of the others, and I have noted for years that such rows maintain their superiority to the end of the season. Labor and manure bestowed on a first crop must not be thought to be lost beyond the use of one crop; they will show for years.—*James Miller, Tioga Co., Pa.*

Ants and Aphis. Do ants destroy the green lice which thickly cover young Apple trees, etc.? A French horticultural writer of large experience claims that the ants do not destroy the lice, but "milk" them, thus rendering them all the more voracious and destructive. My observation of a number of trees planted this season indicated that the work of the ants was beneficial to the growing foliage, rather than otherwise. Where there were but few or no ants the leaves were densely covered with lice, while the trees upon which the ants swarmed in large numbers were comparatively free from lice, indicating that the ants had destroyed the lice. *H. H. Boardman, Providence Co., R. I.*

This paper costs a fraction above eight cents per number to yearly subscribers, a dollar for the annual volume, index included. Considering its character throughout, every one knows that this is cheap, very cheap, and as such it can only be successfully published on the basis of very many cash subscribers. Need we give any further hint to the friends of horticulture than this? What is really needed is that every person who reads these lines, whether now a subscriber or not, see to it first that their names are on our books as paid up subscribers; second, that they interest themselves in getting their friends everywhere to subscribe. This journal should have a greatly increased subscription list.

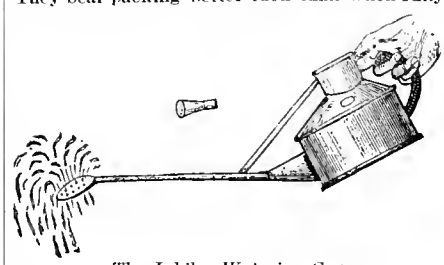
A Great Work. There has been received at this office by the courtesy of Mr. J. Wm. Sims, of Topeka, Kansas, the Biennial Report of the Kansas State Board of Agriculture, for 1885-6, and which is one of the most satisfactory public documents we have ever met. It is a well-bound volume of 842 large octavo pages, containing colored maps of each county, colored by towns, with section lines, streams, post-offices, churches, schools, etc., all marked down in their proper places. An edition of 20,000 copies has been published we have been informed, and at a cost of more than $30,000, but as a work setting forth the advantages of Kansas as a place of residence and business it will undoubtedly be worth twenty fold what it cost to that commonwealth.

Enhancing the Effect. It is a great thing to discern and bring out the most ornamental effect of any flower, and especially of such as are called common flowers, in arranging them. This thought arises through recalling some arrangements of Sweet Peas lately. Arranged in solid clumps, these flowers are never as lovely as when seen uncrowded on the native vines. But use them in a cut state in connection with Mignonette or some other similar light flower, and they may be very handsomely disposed of. The Mignonette should be taken for a foundation of the bouquet, and just enough of the Peas be intermixed to show to advantage. Then the beauty of both is brought out as it would not otherwise be. For such light flowers a delicate vase is the most appropriate for use.

Charles M. Hovey. Massachusetts has been unfortunate in the loss of several of her most able horticulturists within a short time, but none will be more missed than the venerable Chas. M. Hovey, who died in August last, at the advanced age of 77 years. From boyhood he had a taste for gardening, and at the early age of 15 he began to lay the foundation of a nursery business which has acquired a world-wide reputation since then. During his whole career hybridization was his favorite work, and by it he secured many fine results. He was the originator of the Boston Pine and Hovey's Seedling Strawberries, besides numerous improved Camellias, Azaleas, Lilies, and other flowers. In 1835 he founded the Magazine of Horticulture, of which he remained the editor during its existence of 34 years. For 54 years he was a member of the Massachusetts Horticultural Society, and its president from 1863 to 1866 inclusive.

Roses from Seed: Blooms the First Year. Mr. F. W. Washington, of Rutherford Co., Tenn., not having seen anything on this subject in our columns, kindly favors us with his experience, as follows: "I placed the seed in a cloth bag, burying it six inches deep, last November. Examining the seeds in February, I found them sprouted. I then took them from the bags and planted them in cold frames, and here they came up in two days. The plantlets were transplanted to the open ground about April 1st, setting them in rows three feet apart, the plants one foot apart in the row. During the season they have made a fine growth of from one to three feet in height, and about half have bloomed, some very profusely, one with as many as 25 blooms at one time. They have passed through the most severe drought we have ever had in Tennessee without watering, and they are now looking well and some are still in bloom. I send this because all the books say they will not bloom the first year."

Narcissus is an admirable bulb for forcing and is remarkable for flowering better the second year it is forced than the first, so that they should not be thrown away after the first flowering. The Paper White is the best variety for the purpose, in beauty and fragrance vieing with the choicest of flowers. Narcissus can be forced like Hyacinths, and by planting the choicer kinds in a warm border they flower later than the forced ones, giving a succession. Narcissus flowers of all sorts have the good quality of lasting long in water. Cut spikes will remain fresh a fortnight and longer. It is best to cut flower spikes as soon as the first buds gain full size. They bear packing better then than when fully



The Jubilee Watering Can.

open, and never fail to open in water in succession, as well or better than on the plants. N. biflorus, bearing two white flowers on a scape; N. poeticus, and N. gracilis are favorites no collection should be without. N. incomparabilis with its white flowers three inches across is fine for flower work or decoration in pots. Several of the white starry varieties compare with Eucharis and Gardenia in bouquets.—*Susan Powers.*

The Siberian Squill. One of the minute gems among spring flowering bulbs that should be set in the fall is the subject of this sketch, and of which an engraving is annexed. It is known botanically as *Scilla Siberica.* Its flowers are among the earliest of the spring, and they are so beautiful, and withal come on under such easy treatment, that no rock-work or garden should be considered complete if they are missing. Their season is that of the Crocus, but the flowers are far more lasting than those of the flower named. What gives them a special charm is a striking and peculiar shade of porcelain blue which distinguishes them from the other species. It is quite hardy, and also succeeds well in pot cult-

ure. Its choice of soil is one that is rather sandy and well drained. It may be used with good effect as an edging to beds of spring flowers. Bulbs of it that have been used for forcing should never be thrown away, for if they are allowed to fully develop their leaves and go to rest in a pit or frame, and later are planted in the garden, they will thrive well. It is better not to disturb the tufts in ordinary culture, except every two or three years, for dividing them.

Pinks: The Double Lychnis Viscaria. Among our hardy plants what can surpass the exquisite fragrance of the hardy garden Pinks? The old white Fimbriata, known in the catalogues as *Alba fimbriata*, is still a good plant, and happily the occupant of nearly every garden. Not a very great remove from the Pinks are the Lychnises, although botanically distinct. Of these the double Lychnis Viscaria, *Lychnis viscaria splendens plena*, is one of those choice border plants which should find a place in many gardens where it is not now found. The color is a rich magenta, and stands almost, if not quite, alone in this respect. It will grow in almost any situation or soil, possesses the sterling qualities of free flowering, perfect hardiness, with easy means of propagation, viz., by dividing the root-stock. Those unacquainted with it I would ask to imagine a tufted cushion of leaves similar to some Thrifts, from which issue numerous flower stems to a height of 18 inches, closely packed with bright magenta flowers, very useful for cutting. Its extreme beauty is in the embellishments of the hardy plant border or rock garden, where the flowers retain to the last that brilliant hue of color which renders it so conspicuous at this time. Planted in patches, it has a most effective appearance. It is to be had of all the more extensive dealers in hardy plants for about 25 cents per plant.—*A. H. E.*

Twin Glazier Points.

Why Winter the Coleus? It may not be generally known that one may do away with all the fuss and worry of keeping over these plants where a sufficiently high heat—and they need high heat—is not possessed, by annually growing the plants required for summer from seed. Seed that is saved from one's own plants or such as is purchased, and treating similar to that of Balsams and other heat loving plants, may readily be grown into attractive stock. We usually sow in February or March, in pots or shallow boxes of light sandy soil, setting them in a hot-bed or warm house. After the seedlings are fairly under way we treat them just as we do plants propagated from cuttings. The plants being rapid growers under close glass in the spring, develop to a useful size by June. We have raised from a single package of purchased seed, seedlings of nearly every type of Coleuses now popular, besides some pretty intermediate colors. One may always find an interest in growing seedlings of any kind, looking to some improved sort over those now possessed, and the fact that the Coleus is so variable and eccentric in the colors of its leaves is the greater inducement for trying one's hand here. Even if no special degree of success is met there is no reason why this practice of getting up a stock of such useful decorative plants should not be more generally adopted by amateurs than it is, as even where there is limited space under glass this space is always needed in winter.

"The Illustrated Dictionary of Gardening, a practical Encyclopædia of Horticulture." This is the name of one of the most comprehensive works undertaken in recent years with a view to treating the subject of practical horticulture and botany exhaustively from a popular standpoint. The fact that such a competent authority—practical as well as scientific—as Mr. George Nicholson, Curator of the Royal Botanic Gardens, Kew, England, should be its editor will at once be received by the horticultural world as a sufficiently high endorsement of its great merits. This gentleman, as was naturally expected in any work of such a character he would undertake, called to his assistance the most eminent cultivators and botanists of England, with the result that able men like Sir Joseph Hooker, Prof. W. H. Trail, Dr. M. T. McMasters, editor of the Gardener's Chronicle, London, Rev. Percy W. Myles, William Batting, James Veitch, Peter Bair, and other well-known authorities, were included among its leading contributors. The work when completed will embrace seven volumes of upwards of 250 pages each, with more than 2,000 engravings, and numerous colored plates, executed in the highest style of the printing art. All these volumes but the last one, and bringing the alphabetical classification to S C L, have been issued and received at this office. The aim of its projectors was to make it an encyclopædia of practical information and botanical classification, brought down to present date, and the standard work on English horticulture in all its branches, from the growing of the hardiest plants to cultivation of tender exotics. The subject of insects and diseases receives a full share of attention. While this dictionary was prepared from an English standpoint, it will be found to possess a value for Americans second to no other work now before the public. Arrangements for its sale in America have been made by its publishers in London through their representative, Mr. James Penman, whose address in this country is 129 West Newton Street, Boston. It is most gratifying to us to learn that the work is already meeting with a good demand in this country.

Our Journal's New Dress. The new and third volume of POPULAR GARDENING AND FRUIT GROWING starts off in a bran new dress of copper-faced type throughout. The style of the type is also somewhat changed from the old, a step undertaken with a view to giving the same amount of matter per page as before, that is, using the same *body* of type but with the *face* somewhat larger, hence easier to read. It may be said that about the only complaint ever heard against this journal, and that from aged people, has been the smallness of much of the type used, and this we have aimed to remedy. To show plainly that the enlarged face adopted is not at the expense of printing less matter, it is only necessary to count the lines per column in last month's paper and those of the same grade in this to observe that they are precisely the same. Indeed more matter is printed in the entire paper than before, through making several other changes. For one thing the first two or three pages of each number have heretofore appeared in brevier type, a size considerably larger than the main body which is minion. But inasmuch as a stronger face of the minion was chosen, it has been decided to substitute the regular minion for this brevier henceforth, thus giving considerably more matter in these pages. Again a smaller sized type has been adopted in which to print the Inquiries; with some gain of space here and certain heads of departments have been considerably reduced in size with the same result. Altogether we are sure these changes will be voted as being most favorable ones, and we trust that the outlay involved on this account will be accepted as but another sign of our strong desire to still further improve this the people's horticultural journal.

Floral Notes From New York.

This time in September is the summer of our discontent, as far as flower work is concerned. Every one is out of town, except a few hundred thousand toilers, who do not count where luxuries are concerned. It is a singular fact, however, that these toilers are just as fond of flowers as their wealthier sisters, and they are not satisfied with any but good ones, either. They must have Roses, whether in bouquets or designs.

There is a very great improvement in the quality and appearance of everlasting flowers, and they are used to an extent that the regular flower growers cannot regard with much favor. The immortelles, always stiff and rather ungraceful, are replaced with the starry Cape Flowers. They are dyed much better than they used to be; the colors are very good, and the dye is permanent, so that they are not affected by water. They come in exquisite shades of lavender and lilac, quite different from the aggressive purples formerly in vogue, and the bright shades are really beautiful. Of course a grower cannot be expected to admire these dried flowers very greatly, and the most disinterested cannot for a moment consider them equal to fresh ones, but undoubtedly they have their place.

A new design, originated by Mr. Le Moult, who has protected it by a patent, is the Scale of Life. It is a pair of balances, bearing the words "Scale of Life" on the platform. One of the scales holds a crown, resting on Palm leaves, emblematic of eternity. This is weighed down to the platform, while the other scale, high in the air, is filled with bright flowers, suggestive of earthly joys and honors. Made finely it is extremely handsome, and may be infinitely varied.

Another design by the same maker is a variation of the broken link. A handsome cushion is made, on which lies a chain composed of several links, one of them being wrenched apart. The entire links are made of colored flowers, but draped with black ribbon; the broken link is composed of white flowers, with a mingling of Forget-me-nots, and a draping of white ribbon. Ribbon is apt to be used rather too much; it is sometimes offered as an excuse for poor flowers, and always has rather a millinery look.

We are promised a large show next month, gotten up entirely by a single florist. It is to be novel in every sense of the word; the originator intends to turn a large hall into a minnie forest, and will treat us to a lot of new designs in cut flowers. October is not a very good month for a flower show; Chrysanthemums are not really in, and almost everything else is out, so it will require a little ingenuity to make it a success.

At this season wild flowers are again coming in, to the grower's disgust. Golden Rod and Asters produce very showy effects when massed in vases or banked in corners. Autumn leaves, too, will be used to a certain extent; last year the decorations at some of the prettiest country weddings were of autumn leaves and wild flowers; they were both elaborate and showy.

It is probable that Carnations will be more used this winter; a larger number of them are being grown. With long stems and their own foliage, they make the most appropriate corsage bunch for street wear; they are more suitable to walking toilets than Roses.

In all designs or floral decorations the tendency is still to avoid the mixture of many sorts of flowers in one piece. It is apt to give an incongruous effect, like the combinations on a London dinner table, consisting of Primroses, Pink Azaleas, White Rhododendrons, Pelargoniums, and White Wood Anemones.

The dinner-giving season has not commenced yet, but the prevailing effect will doubtless be one of choice simplicity. Colored centre-cloths are becoming rather old-fashioned, and there is a tendency to banish excess of plate and the elaborate dessert which has formed part of the decoration. One effectively simple arrangement for a table was merely a bed of Maiden-hair Ferns, with double red Geraniums laid at intervals. English hostesses are decorating their dinner table with Orchids, lightly set in oriental blue china vases, but the china must be old and good, a relic of the possessor's grandmother, if she had one.

Some exceedingly handsome wreaths are now made, without any suggestion of the stiffness we used to see in this shape. A perfectly plain wreath is a rarity; they are usually made in crescent shape. Sometimes they are made with the points of the crescent tied together; others, and prettier, too, merely taper off without the ubiquitous ribbon bow. There is often an admixture of foliage in the bunch at the broader side of the wreath; some of the Silvery Caladiums, Arundo, or Begonia leaves, are most effective. Caladium Argyrites is especially useful in cut-flower work; it is most charming in baskets as well as designs.

The Siberian Squill.

Somehow we seem to be getting rather too symbolic in some of our designs. Witness the tribute offered some prominent railroad men: A Gates Ajar, with a railroad running through the gates, and the inscription: "He has the right of way to Heaven," or words to that effect. It might have been appropriate, but the suggestion was certainly rather incongruous.

EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN

An Edible Mushroom (*Lycoperdan giganteum*), 15 inches across, was shown at the New York State Fair.

The Red Pine wants transplanting every few years in the nursery to keep the roots well under control, fitting them for moving.—J. W. Manning.

Wet Soils and Warmth. Contrary to the common opinion, Dr. Beal of Michigan has found that wet soils are not necessarily the coldest.

Pests of the Pomologist. The New York World commenting on Prof. Lintner's able paper before the Pomological Society states that by strange oversight he made no mention of the small boy.

Those who delight to see large Pears are sure at the exhibitions to be satisfied with the plates of Souvenir du Congress. They look like a much enlarged Bartlett, while the taste is similar. Tree vigorous and pyramidal in form.

An Incorporated Society. The American Pomological Society became such by a unanimous vote of the last meeting, in order to comply with the conditions of the bequest of $5,000, made by the late Marshall P. Wilder to the Society.

A Strong Word for the Wistaria. I should like to say something in favor of the Wistaria magnifica. It blooms twice a year. It is not a climber, but a winder. It does not injure the wall of the house, and is exceedingly rapid of growth, and beautiful. You can easily keep it trained, and it will take a neat and shapely form of itself. It makes a very desirable plant, and is very hardy.—*Mr. Albaugh, before the Ohio Horticultural Society.*

Workingmen's Flower Show. The Co-operative movement was represented at South Kensington, London, on August 23d, on the occasion of the National Co-operative Flower Show, It was an exhibition of the products of *bona fide* workingmen's gardens, grown from seed sold in penny packets. The show was both interesting and instructive, as it thoroughly represented the gardening capabilities of small cottagers throughout the length and breadth of the land. Cheap excursions were organized from all parts of the kingdom. A conference was held in the afternoon on the possibilities of Co-operative Allotments and Associated Gardens.

The Climbing Hydrangea in Ohio. Mr. Harrison calls this Hydrangea scandens, and says it must not be confounded with Schizaphragma Hydrangeoides, being much more desirable. Leaves heart-shaped, sharply toothed, dark green. The flowers, which he has not known to be produced anywhere except in Northern Ohio, are white, in loose clusters. It is proving hardy with him and he thinks it will be throughout the state. He thinks it very desirable for ornamenting buildings. Secretary Campbell said that it grew very successfully indeed, and seems perfectly hardy at Delaware, Ohio, which he denominates as cold a place as any in Ohio. He thinks it will be a very desirable plant.

Where the Difference Comes In. C. L. Smith, of the Minnesota Horticultural Society, alluded to visiting a farm where they had an abundance of Currants and Raspberries year after year, and on the table cooked fruit with food which cost almost nothing. Half a mile further on he had Prune pie the next day, not equal in quality to the first mentioned, but costing more, as the Prunes were imported, costing ten cents a pound, and were paid for with wheat at fifty-two cents a bushel. This man could not afford a dollar for membership in the Horticultural Society, but had just given an order to a tree peddler for a dozen Strawberry plants with some high sounding name, at two dollars, a Russian Mulberry for one dollar, five Apples "direct from Russia" for two and one-half dollars, and various "Tree" Currants, Tree Roses, etc., at extravagant rates. There is still room for the spread of intelligence among the people.

Planting and Mulching. At a meeting in Michigan, Thomas Wilde said the best time to plant Strawberries was as soon as vegetation starts in spring, so as to get the benefit of all spring showers. Planting may be done in May or June by removing the fruit stems and some leaves. The time for planting in autumn is when the new plants are fully matured. A. G. Gulley said we can seldom get new plants before September, and it is best to let them wait till spring. T. T. Lyon had found that plants set in early spring were two or three times as far advanced in June as some set a week later, and he was convinced that they could not be set too early. For mulching, he said that sorghum bagasse is highly recommended, and being crushed it soon decays and forms a useful fertilizer. Dr. Marshall used planing-mill shavings with success; E. S. Scott said marsh hay, cut before the seed ripens, does well, and A. G. Gulley advised spent tan-bark.

Articles Shown at the Florists' Convention, Chicago. *Vases and Pots*, Nee Ban, Chicago; *Colored Lithographs of Flowers and Catalogue Covers*, Beatty & Co., New York; *Baskets and Florists' Supplies*, M. M. Bayersdorfer & Co., Philadelphia; *Sectional Hot Water Heater*, J. D. Carmody, Evansville, Ind; *Barbed Glazier Points*, B. B. Chandler, Hyde Park, Mass.; *Landscape Architect's Designs*, Caparn & Son, Milburn, N. J.; *Hot Water Boiler*, Devine's Boiler Works, Chicago; *Rock Work Material*, Wm. Dilger, Sandusky, O.; *Armored Hose*, W. I. Dickerman, New Haven, Conn; *Petunia and Gloxinia Blooms*, H. A. Dreer, Philadelphia; *Wrought Welded Hot Water Boilers*, Eclipse Manufacturing Co., Chicago; *Florists' Wire Designs*, Falls City Wire Works, Louisville, Ky.; *Seedling Abutilons*, John S. Forster, Evanston, Ill.; *Philodendron Pertusum, Flower and Fruit, Justicia coccinea*, O. Gorke, Douglas Park, Chicago; *Metal Glazing Joint, Electric Temperature Alarm*, J. M. Glasser, Cleveland, O.; *Bulbs, Sash Lifter and Steam Call Bell*, E. Hippard, Youngstown, O.; *Statuary, Flower Pots, Vases, etc.*, C. Hennecke & Co., Chicago; *Putlying Machine*, J. H. Ives, Danbury, Conn.; *Designs, Dried Flowers, etc.*, Immortelle Design Co., Philadelphia; *Novelties in Florists' Baskets*, Ed. Jansen, New York; *Sphagnum, Holly, etc.*, Z. K. Jewett, Sparta, Wis.; *White Doves*, Koehler & Bro., Philadelphia; *Bulbs, Florists' Supplies*, James King, Chicago; *Immortelle Letters and Inscriptions*, W. C. Krick, Brooklyn, N. Y.; *Wire Design and Design of Dried Flowers*, C. A. Kuehn, St. Louis; *Aster Flowers and Plants*, John Lane, Chicago; *Cypress Sash Bars*, Lockland Lumber Co., Lockland, O.; *Bouquet Holders for Dress*, R. F. Lawrence, Buffalo, N. Y.; *Bulbs, Immortelles and Palm Leaves*, F. E. McAllister, New York; *Baskets and Florists' Supplies*, Marschentz & Bacharach, Philadelphia; *Gladiolus Flowers*, S. C. Moon, Morrisville, Pa.; *New Single Tuberose*, Michel Plant and Seed Co., St. Louis; *Specimens Printing*, J. Horace McFarland, Harrisburg, Pa.; *Iron Frames for Slate Benches*, Chas. S. Price, Landsdowne, Pa.; *Copies of Illustrated Dictionary of Gardening and Encyclopedia of Horticulture*, J. A. Penman, New York; *Ventilating Apparatus*, Quaker City Machine Work, Richmond, Ind.; *Orchid Blooms*, Charles Reissig, Chicago; *Tobacco Soap*, Rose Manufacturing Co., New York; *Putty Bulb and Rubber Sprinkler*, John A. Scollay, Brooklyn, N. Y.; *Orchid Blooms*, Siebrecht & Wadley, New York; *Flower Pots*, Taylor & Schofield, New Brighton, Pa.; *Gladiolus Flowers*, James Vick, Rochester, N. Y.; *Bulbs, Florists' Supplies, Holly, etc.*, J. C. Vaughan, Chicago; *Glazing Tool, Labels, Mailing Boxes*, H. W. Williams & Sons, Batavia, Ill.; *Force Pump, Cedar Plant Boxes*, Frank Whitnall & Co., Milwaukee; *Hot Water Boilers*, Thos. W. Weathered, New York.

Hedge System of Growing Hardy Roses.

[*From a paper read by Mrs. Wade Burden before Greene County, Mo., Horticultural Society.*]

Many years of experience has convinced us that the best and easiest way to grow hardy Roses is in hedges. By hardy, we mean the Roses that will endure our most severe winters with little or no protection, such as Hybrid Perpetuals, Mosses, and some ever-blooming Roses.

For starting a hedge spade deep and pulverize thoroughly a border about two feet wide and as long as you wish. Set plants about a foot and a half apart, firm down well about the stem, water sparingly for two or three days, and shade, if necessary, until well set, then discontinue watering, as it tends to encourage surface roots, and they do not winter as well.

Stir the soil frequently, cut back after every period of bloom and cut off all Roses soon after they are well opened. Some Roses are inclined to throw up too many shoots; part of these should be rubbed off when they first start. Any ordinary soil will do for a hedge.

Do not cultivate late in fall but let the soil be firm close around the roots. Fill up the border with chip dirt well above the crown. Prune severely after the growing season is over. Don't disturb the plants in spring until all danger of freezing is over, then dig up the border and cut out all the dead wood.

We have had very little trouble with insects; a few caterpillars or an occasional Rose bug have been the extent so far. These must be watched for and picked off by hand.

By following these directions we have always had healthy plants and abundance of bloom in the same spot. There is a Rose hedge in this city that has not been moved for ten or fifteen years, and it is in fine condition.

Such Roses as the Hermosa, Malmaison and Apolline are good hedge Roses; also the Washington and Caroline Marinesse. We are trying the La France, but cannot recommend it from our own experience until further trial, though have seen it growing for years. Others make more buds than they can open; these should be thinned out.

Some of the Teas are also quite hardy in Missouri; they are killed to the ground in winter but make rapid growth in spring, and are generally in bloom as soon as the Hybrids and annual Roses. A neighbor has a Tea Rose that is thirty years old. It is said to be a Safrano, and has stood in the garden summer and winter all that time. It is now covered with blossoms.

Biennial Meeting of the American Pomologists, Boston.—The Massachusetts Society's Show.

The twenty-first session of the American Pomological Society, held at Boston, Sept. 14–17, was a very successful meeting. The papers presented, together with the discussions, were varied and instructive, the attendance of delegates good, the exhibits, combined with those of the Massachusetts Horticultural Society, were large and attractive. Boston itself, with its many horticultural, pomological and other attractions, was found to be a most charming and instructive place for such a meeting, and the visits of delegates to the attractive places about the city, like the public gardens and cemeteries, the botanic garden at Cambridge, Arnold's Arboretum, the various nurseries and private places were, during the course of the meeting, numerous.

Upon this meeting devolved the solemn duty of electing a successor to the lamented Wilder, who for upwards of thirty years, and to the time of his death, had occupied the position of its president. The new choice fell upon the widely known pomologist of the Southern States, Mr. P. J. Berckmans, of Augusta, Ga., a choice which must meet with the widest approval from all friends of American pomology. The other officers elected were:

1st Vice-president, T. T. Lyons, South Haven, Mich. Vice-Presidents by States: J. S. Newman, *Alabama;* A. P. R. Spofford, *Arizona;* E. F. Babcock, *Arkansas;* Dr. J. D. B. Stillman, *California;* Dr. Axel Shaw, *Colorado;* P. M. Augur, *Connecticut;* L. D. F. Poore, *Dakota;* Edward Tatnell, *Delaware;* William Saunders, *District of Columbia;* D. W. Adams, *Florida;* Dr. Samuel Hape, *Georgia;* William H. Drake, *Idaho;* Parker Earle, *Illinois;* Sylvester Johnson, *Indiana;* J. A. Foreman, *Indian Territory;* Col. G. B. Brackett, *Iowa;* G. C. Brackett, *Kansas;* E. F. Hillemeyer, *Kentucky;* S. M. Wiggins, *Louisiana;* G. B. Sawyer, *Maine;* S. T. Jenkins, *Maryland;* William C. Strong, *Massachusetts;* E. H. Scott, *Michigan;* John S. Harris, *Minnesota;* J. H. Cassell, *Mississippi;* N. J. Colman, *Missouri;* John Jones, *Montana;* Samuel Burnett, *Nebraska;* J. H. Kirkwood, *Nevada;* C. E. Grosvenor, *New Brunswick;* Frederick Smith, *New Hampshire;* William Parry, *New Jersey;* N. E. Andrews, *New Mexico;* C. L. Hoag, *New York;* Dr. J. W. Green, *North Carolina;* Rev. J. B. Hart, *Nova Scotia;* George W. Campbell, *Ohio;* L. Woolverton, *Ontario;* H. W. Prettyman, *Oregon;* Josiah Hoopes, *Pennsylvania;* Robert Jack, *Quebec;* Joseph H. Bourn, *Rhode Island;* W. D. Johnson, *South Carolina;* A. W. Weber, *Tennessee;* T. V. Munson, *Texas;* C. E. Johnson, *Utah;* Dr. T. H. Hoskins, *Vermont;* H. T. Lyman, *Virginia;* Philip Ritz, *Washington Territory;* D. H. Strother, *West Virginia;* James M. Smith, *Wisconsin;* John W. Hoyt, *Wyoming.* Secretary, C. W. Garfield, Grand Rapids, Mich.;

Treasurer, B. G. Smith, Boston, Mass. Executive Committee, Franklin Davis, Virginia; J. E. Mitchell, Pennsylvania; J. H. Masters, Nebraska; C. W. Garfield, Michigan.

The meetings were held in the rooms of the Mechanic's Institute, and this was also the place of the exhibition. In the line of exhibits the entries were altogether very extensive, the special prizes offered by the Massachusetts Society serving to draw out a grand show. Our space does not permit of giving an entire list of entries, but mention may be made of some of the more conspicuous ones.

For the best general display of fruits of all kinds a prize of $25 was given to the Lincoln Grange, of Massachusetts.

The T. S. Hubbard Co., of Fredonia, showed 165 varieties of native Grapes, this being the largest exhibit of such ever brought together. This exhibit drew the first prize as the best collection of natives. The second prize was received by E. Williams, Mount Clair, New Jersey, who showed 41 varieties, and the third by Warren Fenno. For a fine display of Eaton and Howe Grapes, John B. Moore & Son, Concord, Mass., received a silver medal.

D. S. Marvin, the progressive hybridizer and Grape grower, of Watertown, N. Y., showed nine new varieties, among which, raised as they have been at the far North, it is safe to assume there are some which will make their mark.

Mr. A. J. Caywood, Marlboro, N. Y., made an interesting exhibit of new varieties, including a fruiting vine of the Ulster four years old, and bearing 38 well developed clusters of fruit. His "Black Delaware," with its handsome, compact cluster, fine bloom and exquisite sweetness, drew many favorable comments from visitors.

In hot house varieties Mr. David Allan, gardener, to R. M. Pratt, Esq., of Boston, showed some striking specimens, which received premiums. His handsomest and best ripened first prize specimen consisted of a cluster of Black Alicante, weighing five pounds six ounces. The prize for the best two bunches of Black Hamburgs also went to him, the weight of the clusters being respectively 8 pounds 4 ounces and 5 pounds.

The special and general displays of Apples were fine, the exhibit by the State of Arkansas receiving for general display the first award, that of the Worcester Grange the second, and C. C. Shaw the third. We greatly regret lacking space to go into details concerning the many creditable exhibits in this department. Among newer or less known varieties that attracted much notice were the Barne's Striped, by Simon E. King, Worcester, Mass., and the Wolf River Apple, by A. L. Hatch, of Ithica, Wis.

The best collection of Pears was the 130 varieties of Ellwanger & Barry, Rochester, N. Y.; the second that of C. H. Hovey, of Cambridge, Mass., consisting of 118 varieties, and the third Warren Fenno's, of Revere, Mass. A special prize was offered to Mr. F. R. Shattuck for Bartlett Pears from the first tree grown in this country, the same having been produced on the farm of the late Enoch Bartlett, Roxbury, Mass. In Peaches the best general collection was that of C. G. Smith; second, Smith & Kernan; third, David L. Fiske. But few Plums were shown.

Among the newer and specially interesting varieties of fruits shown besides those mentioned were the following: A plant of the Jessie Strawberry, at present in fruit, by Chas. A. Green, Rochester, N. Y. Green Mountain Grape, by Stephen Hoyt & Sons, New Canaan, Conn., a white variety said to be a week earlier than Hartford. Four new varieties of Grapes not yet named, by Jacob Moore, Attica, N. Y. The Northern Light, a large white variety that originated on the Ottawa River, Ont., T. S. Hubbard, Fredonia, N. Y. Japan Persimmons, Lemons, etc., by several Florida growers. Apples and Pears, C. R. H. Starr, Port Williams, Novia Scotia. Collection of Apples grown under Cole's System of New Agriculture, O. P. Rooks, Gardinia, Fla.

The exhibits in the line of ornamental plants, flowers and trees was magnificent in the extreme. Indeed as regards the greenhouse and hot-house plants on the main floor of the exhibition hall, it is questionable whether another city on the continent could command as fine a display as the one of this occasion, drawn out by the prizes of the Massachusetts Horticultural Society. The arrangement was also most admirable. The leading prize-takers in pot plants were H. H. Hunnewell, William Martin, George A. Nickerson, W. A. Manda, of the Botanic Garden, Mrs. F. B. Hayes, John L. Gardner, Thomas Clark, C. H. Hovey and Thomas W. Dee.

Some fine groups of hardy Evergreen shrubs and herbaceous plants were shown by W. C. Strong of Nonantum Hill, Mr. F. L. Temple, Somerville, Mass., and a general display by J. W. Manning, of the Reading Nurseries. The strong collection received the first Hunnewell prize for evergreens and shrubs, that of Mr. Temple the second. In Mr. Strong's exhibit were shown 50 varieties of ornamental deciduous trees and shrubs besides the Evergreens. The Manning collection of Evergreens comprised 52 varieties, of which 45 were conifers. This exhibit also embraced in another section numerous herbaceous perennials, prominent among which were the Desmodium pendula, with rich, purple flowers, and Gaillardia aristata, a late summer blooming plant of undoubtedly great value. Mr. Temple, of Somerville, has shown much enterprise in bringing out new varieties of merit. Besides his general collection he exhibited the new Weeping Lilac, *Syringia ligustina Pekinensis pendula*, one year from bud, which attracted much attention for its beauty and grace, also receiving a first-class certificate of merit. He also showed the new Golden Hop-tree, *Ptelea trifoliata aurea*, a promising lawn tree, and a fine form of the Hardy Double Gaillardia, *G. aristata Templeana*, a plant that will be sure to attract wide interest.

Among the numerous other striking exhibits in hardy and garden shrubs, plants and flowers, may be mentioned a collection of 66 species and varieties of fruiting shrubs, by Jackson Dawson, of the Arnold Arboretum. L. W. Goodell, Dwight, Mass, Asters (including some promising varieties of his own, notably, Shakespear's Purple Black), Pansies, etc. Edwin Fowkes & Sons, Dahlias, Cannas, etc. W. A. Manda, Single Dahlias, Succulents, etc. Mrs. P. D. Richards, West Medford, Mass., 60 glasses of native flowers. E. S. Hill, Hyde Park, general collection. J. F. C. Hyde, Hibiscus flavescens, white with crimson center, and others. Siebrecht & Wadley, New York, a $2,000 Vanda Sanderiana. Mr. John Simkins showed several tanks of Victoria regia and other aquatic plants that attracted the constant attention of visitors.

Other matters pertaining to this interesting meeting will appear elsewhere in this issue and in subsequent issues. The next meeting of the society will be held in the State of Florida, the exact time and place being not yet determined.

Some Things for Gardeners at the Agricultural Science Meeting.

The following topics of interest were considered at the recent meeting of the Association for the Promotion of Agricultural Science in New York.

About a Destructive Maggot. Prof. A. J. Cook in a paper on "Economic Entomology" brought out the important conclusion that the Cabbage, Onion and Radish maggots, heretofore regarded as distinct, are really the same species. Though they differ somewhat in appearance, all gradations have been found between them and the Cabbage maggot has been grown upon the Radish and *vice versa*. Onions also are badly affected on ground where Cabbages were affected the previous year. The maggot seems to prefer the Cabbage, but will attack the Onion when that is not to be had. It has also been observed on several uncultivated plants. The only practicable remedy: Change the location of the crop when the maggots become troublesome.

Plum Curculio on Other Fruits. Additional evidence was given to show that the Plum Curculio attacks also the Apple, Pear and Peach when Plums are not to be had; the former might be protected by planting Plum trees in the orchards.

Some Generalizations were advanced by Dr. E. L. Sturtevant as follows: 1st. *Types of Cultivated Plants.* Such do not originate in nature, are not produced by cultivation; 2d. *Changes Effected by Cultivation.* These can be expressed by the terms expansion, quality, prolificacy and earliness or lateness; 3d. *Hybrids or Crosses* are rarely intermediates, but approach one parent more than the other; 4th. *Hybrids tend to purge themselves* of their mixtures; they are rarely found in Nature.

Some Valuable Points on Cultivation. Dr. Sturtevant showed that the chief purpose of cultivation was to maintain moisture in the soil by keeping it in condition to derive moisture by capillary attraction from the subsoil below. In the growing season more water was evaporated from the soil than was deposited during the same time as rain. Moisture in agriculture is of more importance than fertility. The main question is "How to get the fertility of the soil into the crop." It is useless to fertilize the soil without supplying sufficient moisture to make the fertility available. For this purpose cultivation is usually the only practicable means.

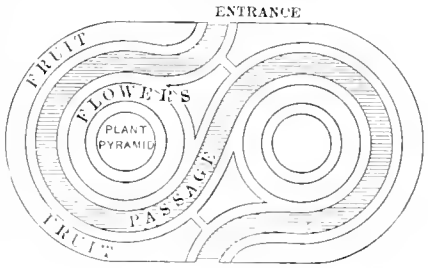
Mulching prevents evaporation, but it is less valuable than cultivation, in that it does not, to the same degree, secure a continuous rise of water by capillary attraction from the subsoil thus bringing up in solution additional food supplies for the plants. An important point brought out in this paper was the fact that weeds do their chief injury, not by extracting fertility, but by causing increased evaporation, thus lessening the amount of moisture present.

Horticulture at the New York State Fair.

"Floral Hall," a large tent 120 feet long by 80 feet wide, did not begin to hold all the flowers, fruits and vegetables which progressive New Yorkers sent to their State fair, held at Rochester September 8 to 14. The vegetables, of which there was a large display, were crowded into the adjacent Domestic Hall, while more than one exhibitor of fruit and flowers complained at the shortness or utter lack of space for his entries.

The arrangement of the hall was admirable, both for showing the articles exhibited and for general effect. This may be understood by the accompanying ground plan, which shows the location of the different exhibits in one half of the tent, and this was a repetition of the other half. With pyramids occupying the two central circular parts, consisting of handsome Palms and other hot-house plants towering some 12 feet upwards, and then the flowers, fruits, etc., on the lower stages, it is easily imagined how handsome the hall was. For all this much credit is due to the taste and judgment of Mr. Frank H. Vick, who was Superintendent of the Hall.

Of course no fruit display at Rochester could be considered complete without an exhibit by



Arrangement of Floral Hall, at the New York State Fair.

the well-known nurserymen, Ellwanger & Barry. These gentlemen headed the list of extensive exhibitors in the professional list of this department, showing of Pears, 105 varieties; of Plums, 15 varieties; Peaches, 18 varieties; Grapes, 62 Native Grapes (including their own promising varieties, the Monroe and the Rochester), and 10 Foreign Grapes, all of which took first prizes. Next in extent in Grapes to the last was the exhibit of the H. E. Hooker Co., Rochester, who received second prize for the best general collection. Mr. John Charlton, the well-known grower of new varieties, was present with 28 different Grapes, new and old. He showed the new Norfolk, styled by some "Early Catawba," it being a promising early red variety; and the El Dorado, one of Rickett's seedlings, the fruit of which is white, as large as Niagara and the quality superior.

The Niagara Grape, as was to be expected here so near its home, was shown in great profusion. The originators at Lockport had on hand some baskets of remarkably handsome fruit of this variety, but it was left to the Niagara Grape Co., as represented by Dr. H. P. Van Dusen, of Newark, N. Y., to show that the Niagara can be grown "as cheap as Corn" by any one. What they did was to bring an entire vine, four years old, taken from their vineyard, bringing trellis, wires, and all, and which vine showed the surprising number of 86 perfect clusters of fruit.

Among other exhibitors in the fruit department the displays of those named below were conspicuous, most of which took both first and second premiums in different classes: O. S. Jacques Wright's Corners, N. Y., C. P. Whitney, M. F. Pierson, H. N. Peck, J. Zunbrich, E. Van Allen, H. Glass, Palmer Worden, H. E. Hooker Co.,

John Weld, James Craib & Son, H. Hoffman, Chas. Coolidge, and Howard Bros.

In the ornamental department the pyramids of plants already referred to, and which were drawn from the private collection of W. S. Kimball of Rochester, attracted perhaps the most notice. Such certainly was the case if we speak of this gentleman's exhibit as a whole, for this included, additionally to the pyramids, numerous rare and costly Orchids, Asiatic Pitcher Plants and Aequatics, which commanded all eyes. This general collection drew the first prize of $30, the second going to J. B. Keller. Among other extensive exhibitors here was the last named gentleman of Rochester, N. Y., in an exhibit of various pot plants, securing a number of first prizes. Mr. James Vick with a characteristically large and good show, consisting mainly of seed-grown summer flowers, and which, with Asters and Phlox Drummondi in the lead throughout, received numerous first premiums, Saltes Bros., plants and floral designs, taking first prizes, and Schlegel & Sons, with a fine and varied display of pot plants. Still other exhibitors, most of which took both first and second prizes, were the Philadelphia Floral Co., Geo. A. Mathers, A. Stone, H. Dempster, Mrs. D. Lyday, Mary Coolidge, O. S. Jacques and H. Glass.

In the Juvenile Department first prizes of $10 each were drawn by Willie Keller for display of cut flowers, and by Charles Donnelly for a floral design. In the same classes second and third prizes were secured by Willie Keller and Tillie Warford.

The display of vegetables in Domestic Hall was also a very creditable one, that from the New York Experimental Station at Geneva being perhaps the most striking, due in part to numerous rare and curious kinds. James Vick also made a splendid show here, as did also the following parties, in a greater or less degree: C. L. G. Blessing, Charles Coolidge, Howard Bros., M. F. Pierson, Chas. N. Tuttle, E. Van Allen, P. C. Van Allen, Jno. O. Reiley, Daniel Peacock, Herman Glass, F. E. Kudman, C. P. Whitney, Aaron Bardwell, O. S. Jacques and H. W. Skerrett.

Grapes in Illinois.

[*Report of September Meeting of the Alton Horticultural Society.*]

Well grown Grapes were shown in great force. Mr. M'Pike made a fine display of the older sorts, such as *Catawba*, *Concord*, *Norton's Virginia*, *Rulander*, *Delaware*, *etc.* Among newer varieties shown *Niagara* and *Jewell* received much praise for their good quality and fine appearance, and it is to be hoped that these promising kinds will fulfill the expectations of growers.

J. S. Browne, of Committee on Vineyards, reported that the past season has been one of the worst for rot in several years. It started earlier than usual and lasted so that the crop was not more than a third or half of what it was last year. If the Department of Agriculture's knowledge of the Downy Mildew (*Peronospora viticola*) is so complete that they are able to say what amount of sulphate of copper will be required and when to apply, he thinks their remedy against rot is to grow either those varieties which do not rot, and they are very late, of poor quality, such as *Cynthiana*, late, or, *Marsala*, foxy, or to grow a class that are little subject to mildew, one of which is the *Brighton*; in this class will be found our best quality of Grapes,—using one of the copper remedies as a preventive.

Among the newer varieties which have come under his notice he had found none that are just what we want. *Prentiss* has rotted almost entirely; *Moultonore* nearly all gone; *Empire State* mildews both leaf and bunch; *Marsala* but very little rot, has a thick skin and not of good quality; *Vergennes* all gone; the much advertised *Niagara* over one half rotten both in the bags and out; *Woodruff's Red* badly rotten—drops from the bunch and is very foxy; *Early Victor* rotted on lower part of vine, but not on upper. This Grape is inclined to overbear. Some buds will have as many as five bunches, and four in common; all should be cut off but two or three; *Pocklington* rotted badly and what were left ripened very unevenly—is very foxy; *Cynthiana*, as usual, free from rot and should be grown by every one for family use. The *Jewell*, after watching it for the last three years, he had found as free from rot as the rot proof Cynthiana in flavor equal to the Delaware, ripe nearly a week before Champion, extremely hardy and altogether the most promising early black Grape now on the market and is well worthy of a trial.

Mr. M'Pike, speaking from twenty-one years' careful study and experiment, could say that *Norton's Virginia* and *Cynthiana* were the only two varieties of this vicinity that were anything like certain of good crops year after year. All things considered, *Concord* is the best to plant until some other Grape has proven better; some, like *Goethe*, can be grown by laying and covering in winter and bagging to prevent rot. These tender Grapes were usually of high quality and will repay extra care.

Mr. Riehl agreed that *Cynthiana* and *Norton* were the only Grapes absolutely hardy, healthy and free from rot, but they were small and late, and early Grapes were the only ones profitable here. Had fruited *Jewell* three years and so far had not winter killed and no rot until this year, when the rot commenced unusually early and attacked even *Cynthiana* and *Norton*; believed that in any ordinary season it will be found free from rot, being very early, of the highest quality and healthy; believed it will prove our most profitable Grape to plant.

Had grown the Niagara two years, and considered it the best white Grape we now have; it is hardy, healthy, very good quality, large and handsome, and the only White Grape with him that does not rot as it ripens. Is too late for shipping North, but for home use and Southern markets believed it would give good satisfaction.

Mr. Riggs reported that vines cut down in '85 as bearing a full crop of Grapes free from rot.

[At a previous meeting of this Society it was stated that Grapes sacked before the 5th of June remained sound, but all sacked after that date rotted as bad or worse than those not bagged. Usually we have a much longer period in which to do the sacking, but this year hot weather and rains came earlier and as a consequence rot commenced as soon almost as the Grapes were out of bloom. *Moore's Early* has again proven a very satisfactory market Grape, being early, large and fairly good in quality, with but little rot. The rot this year was worse than last season.

The Secretary stated he had read of experiments by three different persons in sacking Grapes before blooming and in every case it was stated that the Grapes fertilized well in the sacks, and recommended that next season all the members having Grapes try the experiment on at least a few bunches of every variety they have, in order that we may learn whether all varieties will fertilize themselves in the sacks, for if so it will be a great gain, giving longer time for the work.]

The Retail Florists' Business.

[*Abstract of J. M. Jordon's Address before the Convention of Florists at Chicago in August.*]

Quality of Work. The question to consider is how best we can continue to increase the demand and have our work receive the highest place of honor. I see but one way; advance the standard and quality of our work and improve the taste. How best can that be accomplished?

First, your place of sale should be as fine as any in town, neat, clean, flowers and floral designs displayed to advantage, and, above all, you should be master of your art. Allow customers to suggest but not to dictate how to arrange flowers.

The Matter of Prices. A growing and detrimental custom among consumers is the habit of asking for bids on room decorations or floral designs. I have made it the rule for years not to give a price, or furnish designs of decorations, unless we had the order to do the work. Persons receiving your designs and prices can submit them to the unskilled for a cheaper bid.

When parties want to know the cost, ask them what they want to expend, and if this is not enough to make a good job, decline it. I have frequently told ladies that the amount suggested would not decorate their spacious parlors to harmonize with the beautiful surroundings, and thus have often had them double the amount.

Another custom is that of pricing a fine design before it is filled, and then saying, "I want that filled with so many dollars worth," kindly suggesting Roses, Lilies of the Valley and Violets, with a few Orchids; when the price is much too low and when informed of it they will often say, "Fill the best you can for the money." These orders decline, unless the price is ample, for no artist can afford to have poor work leave his store, or give one customer more for the money than he would another.

Another practice: parties call to see a basket filled, and after the price is agreed on suggest that a fine large Rose would improve it. Never put it in, but tell them that it would be better to wear, and wrap it up and give it to them. I have never had the customer make the second suggestion after receiving a gift in that way.

Helpful Agencies. The newspapers are the florists best friends. We should assist them to give correct descriptions of decorations, hand bouquets carried at the opera, etc., mention all new improvements in flowers and arrangements.

By getting photographs of fine work, keeping a short sketch of materials, number of plants, etc., you can easily give customers an idea of decorations and cost.

Competition should be little encouraged. Fine flowers, properly handled, at good prices, are sure to win. Our business should be managed on good business principles. The very perishable nature of the goods we handle should require them to be a cash commodity. Goods should be as represented. Sometimes we have a larger clip of flowers than the demand would receive, then we distribute the surplus among hospitals, schools, or friends, particularly if we have a customer who is reported sick. By doing so we soon make a demand that becomes a necessity.

Funeral Flowers. Unskilled artists have done much to depreciate the worth of floral ornamentation. I venture to assert that there is no city of sufficient importance to give employment to a No. 1 floral artist but what you will find other little shops with signs displayed, "Florist. Cut Flowers Cheap," or to the same import. This class has done much to depreciate the true worth of flowers at funerals, drumming for orders from afflicted friends, and often filling it in a way to disgust the bereaved ones. With this class have no affiliation.

It is my opinion that the request, "Please omit flowers," is often made from the fact that at many funerals flowers have not been properly arranged. When we have a large funeral order we send a skilled man to arrange the designs in the rooms, and often furnish a few nice plants free, to complete the decorations. We cannot afford to have flowers excluded from the home of bereavement. When sadness in its most depressing form has laid its heavy hand on the home by the loss of a loved one our instincts go out in sympathy, and I know of no way we can better lessen the sharp arrow's deepening wound and let in a ray of hope than by arranging about the rooms and casket.

Flowers that tell
What words can never speak so well.

Their lessons often prove an inspiration never to be forgotten.

The Society—Wholesalers and Retailers. Every floral artist should be a member of the Society of American Florists. Every wholesale grower and commission man in flowers should have a list of floral artists (who are worthy the name), and work to encourage them in their art. For to them they must look for their own success.

Fluctuations of prices, on certain days, by wholesale dealers, work a great hardship on the retailers; and growers will learn that steady prices tend to increase the demand with lasting benefit to themselves. Give the retailers the benefit of holidays and good prices, for they have to bear the heavy expenses of long summer months, with little to do and low prices. We want more of good summer bloom, something different from the winter flowers.

Finally, look well to your profession, for it is committed to your hands to give the finishing touch to the ornamentation of many homes, decorating them with garlands of Nature's choicest flowers. Your work is honorable and should make you better by being associated with flowers and the lovers of flowers; and you should aspire to identify yourself with the promoters of science, literature and art in all its branches, having a common interest in their good work.

The Fruit Industry of North America From an European View.

[*Abstract of paper by J. Baerschi before a meeting of the Horticultural Society of Switzerland. Translated by F. Lionberger, Missouri.*]

The fruit industry of North America, and of California in particular, is not an old one. Since the last fifty years it has been growing steady and now attains gigantic proportions. As in a great many other ways the Americans have come to be our teachers, so they

have in the organization and promotion of horticultural interests.

As to the Product. The climatic conditions of North America in comparison with ours are not as good for horticulture as with us. The fruits of North America which can come into competition with ours are mostly Apples, Peaches, and small fruits. The Plum, I understand, cannot be successfully raised on account of a certain insect. Cherries do not seem to increase to any extent and are greatly inferior to ours in quality.

Pears seem to do well all over the United States and are of excellent quality, yet the trees are subject to a certain disease, which will greatly limit the culture. The Pears of California do not grow as perfect, nor are they of such good quality as those grown in the Eastern States.

Strawberries grow in abundance, but they are inferior in quality to those of Central Europe. Blackberries and Currants produce excellent crops in nearly all of the States.

The European vine does not succeed in the United States, excepting in California, and their Native Grapes are inferior to ours.

The European Filberts and Walnuts cannot be grown in the United States, and their Native sorts are of little value. Attempts have been made with our roots in California, but with what success I have not yet learned.

Fruits for Export. The articles of export to Europe will continue to be Apples and Peaches. The climate of the United States seems to be excellent for these. The Apples are sent here both green and evaporated. Many are sold in Russia.

The evaporated Apples, which are mostly in thin, white slices, are packed in neat little boxes adorned with fancy etiquetts. These fruit packages on account of their completeness have been successfully introduced in all parts of Europe.

The manufacture of Apple cider in the United States is also on the increase and it is becoming quite an article of export to England and Europe.

Culture. As to the methods of culture of the Apple and other fruits in North America, I have been informed that the trees are grown in the shape of half standards, and not as standards, as we do. The American farmer is not obliged to use his orchard for the cultivation of other crops, which certainly must influence their trees to a great extent. Another fact, too, is that their fields have not, as with us, been cultivated until exhausted of plant food. Such ground must be very suitable for fruit culture.

What of the Future. I do not think that by the time the fruit culture of America is as old as it is here, it will rank as it does now. The soil will finally get exhausted, and whether it can then be kept up with fertilizers as we have to do is a question. Americans have the credit of being the inventors of everything that is practical for helping themselves out of any difficulty; whether he will know how then is very doubtful.

I have been informed that in some sections the average yield is greatly decreasing. The land seems to be getting exhausted. In the methods of agriculture which our farmers are used to, to compare with those of America, I find a great advantage. Americans will see the time when they will have to make different calculations and adopt different methods. They cannot always expect from their fields what they do now. They will then have to invent things which will require more brains than all of their superior machines.

As to the different sorts of fruits which are cultivated in America they are mostly seedlings of European fruits. A great many sorts have been imported within the last few years from Moscow, St. Petersburg, Riga Schessien, Austria, etc., etc., mostly to get such as can stand the severe climate of the Northern States.

Mr. Semler, a horticulturist of California, has a great deal to say in his work as to the superior quality of American fruits over ours, claiming that our best sorts are greatly inferior to theirs. He has a good deal to say about two cider Apples, Harrison and Hyslop, and thinks that they would prove valuable with us. In regard to the best sorts of fruits, my correspondent in Missouri has sent me scions of all the named sorts and they have been received in fine condition.

The grafting was successful and as I put them upon bearing trees hope to fruit them next year, if not this. At present can only say, that they are rather poor growers.

Fig Culture in Pots Where there is bottom-heat, the Fig is easy to propagate from eyes or cuttings put in in January or February. They should be potted into 6-inch pots, which will be quite large enough for the first season to ripen their growth well. For pyramids stop the cuttings at 8 or 9 inches; but for standards do not stop; after the first year train them to a stake, and they will reach about 4 feet. Then, by removing the terminal bud the following season a fine standard will result. With brisk heat young trees will carry a small crop of fruit the third year. Those who do not possess a glass house, may also grow one good crop of fruit every season. Fine Figs can be grown in ordinary brick, or wooden pits, 4 or 5 feet high, if fully exposed

FIG CULTURE IN POTS: OSBORNE'S PROLIFIC.

to the sun. The best plan for cold-pit culture is to confine the roots entirely to pots. Re-pot every season before starting into growth; 12-inch pots will be large enough when the tops are kept restricted to a limited size; root-prune according to the quantity of roots. It is better to remove a portion of the roots than to push them into the pots in masses. Use good, rough clayey loam if possible, adding some lime-rubble, burnt clay, or charcoal, the size of Walnuts. Drain the pots well, placing some Moss over the drainage. Start the plants about May 1. Give plenty of air, and do not keep them too hot during the daytime; syringe, and close up, with sun-heat, as the the crop advances, and feed with liquid manure when the pots get full of roots. After fruiting let the atmosphere be warm and dry to ripen the wood, when the trees may be plunged in a light, dry shed, or be left in the pits, and material be added, so that the pots may be buried two or three inches deep, keeping the roots secure from frost. Good sorts for pot-culture are the Black, Brown, and White Ischia, Dr. Hogg, Negro Largo (very fine black), White Marseilles, and the kind we figure, Osborne's Prolific, one of the very best.—Gardening Illustrated.

Hyacinths. We cannot yield the palm to the double varieties; no true lover of the flower ever does, for the single present the perfect beauty of color and form. If we could make but one selection, it would be the single Amy, a perfect carmine, then add to it, if possible, Gigantea, Norma, Veronica, Lord Wellington, L'Amie du Coeur, Agnes and Solfatare, given in their order of merit. These are shades of red of which there cannot be too many in making the selection. If possible arrange the bulbs in two beds, one of these to gladden the eyes of your neighbors, the other to pick from. Glasses, etc, filled with cut spikes of brilliant bulbs will last for a number of days, requiring no attention whatever. For the succession of bloom it is advisable to mix the double with the single; generally they are longer coming into flower, and the beauty of the bed is prolonged at least a fortnight. Among the reds select Goethe, Grossfurst, Wilhelm II and Regina Victoria, Lord Wellington and Napoleon. Choose Prince of Waterloo, Venus, Castor, Jenny Lind and Duchess de Bedford for the best effect in snowy, and Jeune Supreme, La Grandeur, Van Speijk for perfect shades of yellow. Give them by all means a dry, free and rich soil. If damp and clayey the winter wetness is retained too near the surface, and the bulbs drop off and decay. By a free soil is meant one that is easily worked and thoroughly drained, and richness is also necessary.—Harper's Bazaar.

Hardy Roses. We find Roses to be gross feeders, so, in making permanent beds fully one-third of the soil in which they will naturally extend their roots is of cow manure. Each winter after the ground is frozen, we place around the roots of each bush a large shovelful of coarse manure; when the ground is settled in the spring, this manure is worked in, and, as a result, we have large and beautiful Roses at the regular times of bloom. There is nothing gained by allowing a Hybrid Perpetual Rose to blossom the first year, as a Gen. Jacqueminot, which did not flower when first set on our grounds, gives much stronger stems of Roses than one which blossomed the first year. There is no flower easier grown than a Rose; after it is once established, nothing troubles the plant save insect pests, which can be easily controlled if taken in time. We found yellow snuff sprinkled freely on the under side of the leaves excellent to disperse the white Aphides which congregated there last spring, and the shears to remove leaf and feeding the surest remedy for slugs.—N. Y. Independent.

Draining the Orchard. We fear some of our readers may conclude that all "sandy loam" orchards require no drainage, and that drainage may be overdone as a matter of expense, not to produce injury to the crop. We desire to allude to the conditions under which light sandy soils need drainage. On a portion of our grounds, of sandy subsoil, with a surface layer of sand containing vegetable matter, we planted Apple and Pear trees. To all appearances the soil is dry; but low on the bank of the river water is seen oozing out even in the dryest seasons, showing that an orchard on the bank would suffer from wet. We dug drains 4½ to 5 feet deep, and at these depths found several springs. Thus it is very easy to be deceived about the dryness of the soil. If a sandy soil has good natural drainage the vegetation should be early, and by comparing this with that on similar soils near a fair conclusion with reference to moisture can be drawn. It is a great mistake to suppose that excessive rains can be removed too rapidly by drainage. With reference to subsoiling, the difference in the effects of this and draining is one more of degree than of principle, drainage producing subsoiling effects in the most practical and efficient manner.—Farmers' Advocate.

The Salsify or Vegetable Oyster Crop. This desirable vegetable succeeds best in a light, rich, sandy loam, well worked before sowing, and with the same treatment that suits Carrots and Parsnips. The seed should be sown as early as the ground can be worked and the roots will be ready for marketing the following fall, winter and spring. The winter supply has to be dug and stored before the ground freezes up, although the roots are not injured in the least by freezing, and may, if desired, be left out for early spring digging. In marketing the roots are tied in bunches of twelve each, none but well shaped roots being used.—Essay before the Mass. Horticultural Society.

The Blackberry from Seed The seeds, like Peach seeds, should be frosted before sprouting. Many years ago I used to put the seeds on the surface of the ground, and place a large, flat stone on them for protection until spring; then, on removing the stone the seeds were nicely sprouted and could be planted wherever wanted to grow. Now I select the berries, put them in a box or basket for a week or more until they are well ripened or partly rotted or dried up so that the seed can be easily separated, then I sow in a small, shallow box of earth three inches deep, cover shallow with fine earth or sand, then set the box in a shady place, generally in the greenhouse, give one good watering, which will last a

long time. When cold weather arrives carry the box outside and let it freeze solid for a week or more; then bring it inside to thaw and the seeds soon come up thickly and may later be potted off and ready to transplant in June.—William Parry in Rural New Yorker.

Rex Begonias. They endure the changeable temperature of our rooms so well, and are so stately and ornamental in appearance, that no plant window should be without one or two specimens. The large, glossy leaves make a splendid contrast with other plants and set off the whole collection. The variety Decasiana is in our estimation the best and most beautiful, and the most hardy and easily grown. The leaves grow to an immense size, and are marked with metallic green on a silvery ground, and lovely shades of purple. Unlike most of the rex varieties, its variegations are along the veins. When the leaves become full grown it casts all other varieties in the shade for beauty. It should be grown in a moist, shady location, and likes plenty of moisture at the roots and rather large pots. Wash the leaves occasionally by showering, not letting the sun shine on them while wet; indeed, the plants do better where they receive only good north light. Large pots, shade and moisture is the secret of growing fine specimens of Rex Begonias to astonish the amateur florist. There is nothing in the kingdom of Nature that will equal the Rex Begonia Jules Cretien. The color is a changeable Strawberry and crimson, overlaying a bronze-green ground, the whole leaf changing in color as the light strikes it from different points.—Indiana Farmer.

Medicinal Qualities of Fruits. Of all fruits the Peach is the most delicious and digestible. There is nothing more palatable, wholesome, and medicinal than good ripe Peaches. It is a mistaken idea that no fruit should be eaten at breakfast. In the morning there is an acrid state of the secretions, and nothing is so well calculated to correct this as cooling sub-acid fruits, such as Peaches, Apples, etc. The Apple is one of the best of fruits. Baked or stewed Apples generally agree with the most delicate stomach, and are an excellent medicine in some cases. Green or half-ripe Apples stewed and sweetened are pleasant, cooling, laxative, far superior in many cases, to salts and oil in fever and other diseases. Raw Apples stewed are better for constipation than pills. Oranges having the acid alluded to are acceptable to most stomachs, but the juice alone should be taken. The same of Lemons, pomegranates, and all that class. Lemonade is the best drink in fevers, and when thickened with sugar it is better than syrup of squills, and other nauseants in many cases of cough. Tomatoes act on the liver and bowels, and are safer than blue mass. All the small-seeded fruits, such as Blackberries, Figs, etc., are among the best foods and medicines. The sugar in them is nutritious, the acid is cool and purifying, and the seeds are laxative. We will be much the gainers if we look more to our orchards and gardens for our medicines and less to drug stores. To cure fever, or act on the kidneys, no thing is superior to watermelons, which may with few exceptions be taken in sickness and in health with positive benefit. But the juice should be taken, excluding the pulp; and the melon should be fresh and ripe.—Journal of Health.

Improved Asparagus Culture. Mr. Van Sicklen, of Long Island, has made the growing of Asparagus a specialty for twenty years, probably in that time selling more Asparagus in the markets of New York than any other man. His method of growing it is simple, and in some respects new to me. To begin, he sows his seeds in rich, sandy loam in April, in rows one foot apart and two inches in depth, dropping the seeds so that they may be distributed evenly about half an inch apart; the plants are cultivated by hoeing between the rows and keeping them clear of weeds by hand picking. In the spring following he sets his plants, now one year old, which are in his experience preferable to those two years old. His mode of planting differs in setting the roots much wider apart than usual; six feet between the rows and four feet between the plants, making less than two thousand plants to an acre. In preparing the land he merely plows to the depth of a foot or so; his soft, sandy subsoil rendering the subsoil plow not necessary, as in soils less favored. In preparing to plant he turns out a furrow with a double mold-board plow, so that at its deepest part it is nearly twelve inches deep; a good shovelful of thoroughly rotted manure is then placed in the furrow, at distances of four feet, and spread to make a layer of three inches or so; and in this an inch or two of soil, and the Asparagus planted on top with its crown six or seven inches below the surface level. The plant is now only covered two or three inches, until it starts, when the furrows are thrown in by the plow so that the whole surface is leveled, which places the crowns six or seven inches under the surface. This would be, perhaps, four inches too deep for heavy soils. The third year after planting a partial crop is taken, although the beds are not considered to be at their best until the sixth or seventh year. Their productiveness may be continued for twenty years by this wide system of planting, recourse being had to manuring freely annually, by digging or plowing it in around the roots before the crop has started to grow, or after it is cut.—"Gardening for Profit."

THE CULINARY DEPARTMENT.

Corn Pudding.—Grate the Corn from a dozen ears, season with salt, pepper, and a little sugar; add the yolks of four Eggs, two ounces of butter, a quart of new milk; bake in a slow oven; when done beat the whites of Eggs, pour over the top, and brown.

Boiling Vegetables—Put them at once into fast boiling water, and bring it to boil again as soon as possible. If left to steep in hot water before boiling they are rendered tough, and the color and flavor are destroyed. So says Popular Science News.

Sweet Potato Pie.—Boil the Potatoes till done, peel and strain through a colander. Add milk till it is thin enough, and for every quart of the mixture add three well-beaten eggs, with sugar and seasoning to taste. Line the bottom of pie-plates with dough, fill with the mixture and bake.

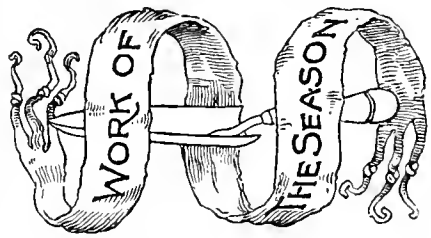
Peach Custard Pie.—Use one crust; peel and halve Peaches and turn the hollow side upward; sweeten as you would a peach pie; take one egg, a pinch of salt, one tablespoonful sugar; beat, add milk enough to cover the peaches, and bake. Eat when partly cool. Canned Peaches will answer as well as fresh.

Peach Tapioca.—Soak some Tapioca over night and in the morning boil until it is perfectly clear, adding more water from time to time as needed; slice five nice Peaches and sprinkle liberally with sugar; when you take the Tapioca from the stove, stir the Peaches into it. Eat cold with sugar and cream.

Stewed Lettuce.—If the Lettuce is not delicate enough for salad, cut it in pieces and boil it soft in water slightly salted; when cooked, drain every drop of water from the leaves. Put some flour with some butter in a pan on the fire, and let it boil. Pour some stock over the Lettuce; let it boil once again, and just before serving pour in a little cream. A little nutmeg is sometimes liked.—American Cultivator.

Bread and Fruit Pudding.—Trim off the crust from a quantity of dry bread and grate the remaining white part of it; add to a pint of it one quart of hot boiled milk, two ounces of butter, four ounces of sugar, half a teaspoonful of salt and a heaping tablespoonful of mixed ground spice. When cool, whisk into it four well-beaten eggs. Peel and slice a dozen fine Peaches, (or any other fruit will do); add them to the mixture, pour it into a brown bread or deep pudding mould, place it in a pot of hot water and steam three hours. Serve either hot or cold and with an egg or cream sauce, flavored with lemon or vanilla. Canned fruits may also be thus used.

Cauliflowers and Tomato Sauce.—One of the prettiest dishes of vegetables consists of a Cauliflower of ivory whiteness resting upon a bed of well-made Tomato sauce. To boil a Cauliflower after it has been trimmed and soaked in salted water for some time, it should be put in plenty of fast-boiling water, with a due quantity of salt. Care should be taken not to overboil it. Try the stem with a thin iron skewer, and the moment it is soft remove the saucepan from the fire, and put the Cauliflower to drain on a sieve. When two or more Cauliflowers are used, they should be molded into one for serving. To do this, when they are boiled cut off the stalk, and dispose the pieces of Cauliflower head downwards in a basin, press them gently together, turn them out dexterously on a dish, and two or three small Cauliflowers will by this means present the appearance of one large one. Care must be taken to have the basin quite hot, and to operate quickly. This may be applied to Broccoli likewise. The sauce should be put into the dish and the Cauliflowers laid upon it; but if the molding process has not been successful, or if the Cauliflowers are not very nice-looking, then pour the sauce over them so as to hide their deformity.



PREPARED FROM DIARY NOTES BY CHAS. E. PARNELL, QUEENS, N. Y.

HOUSE PLANTS.

Abutilons. Nip back the leading shoots occasionally to secure bushy specimens.

Achyranthes for winter show require warmth. Pinch back the leading shoots to secure good form. Water with care and keep down red spider.

Aucubas and other leathery-leaved plants will be the better for a soap wash at intervals.

Begonias of the flowering section to be given plenty of light and liquid manure with blooming.

Cuphea platycentra is disposed to flower for some time to come, if kept in a light, sunny situation. Pinch in the leading shoots occasionally.

Cyperus alternifolius variegata. In lieu of frequent repotting, give liquid manure. Rather close pot room is favorable to fine appearance.

Echeverias. Water sparingly from now on.

Epiphyllum truncatum and its varieties should be placed in a light sunny situation if possible. Give liquid manure occasionally.

Ferns can be placed in any cool, light window. Water thoroughly at the roots, never overhead. Pteris argyrea, cretica albi lineata, Pserrulata eristala, Nephrolepis exaltata and Lomaria Gibba, are all superior for a window.

Fuchsias. See Plant Culture Under Glass.

Hoya Carnosa now requires but little moisture at the roots, but loves heat.

Jasminum grandiflorum now blooming freely will be benefited by liquid manure at times.

Jerusalem Cherries. See Plants Under Glass.

Justica carnea, will produce its spikes of rosy pink flowers more or less all winter if grown in a well drained pot of rich loamy soil. For winter blooming repot and start up now.

Nirembergia frutescens and gracilis, if carefully lifted and potted before severe frosts, will flower freely for a good while in the window.

Oleanders can be wintered in a cool, light cellar from now on, if the room is needed. Keep rather dry at the roots. Treat as for Aucubas.

Pittosporums same as Aucubas.

Rivini humilis from now on will do best in a sunny window. Some liquid manure at times.

LAWN AND FLOWER GARDEN.

Aucubas and similar half hardy plants can be taken up, placed in cold pits, where they can be protected somewhat in severe weather.

Bulb Planting of the Hyacinth and Tulip class to be finished speedily; not but that it can be done for some time yet, but early planting is better.

Caladiums of Bedding Sorts As soon as injured by frost or bad weather to have the leaves removed, and then three or four days afterward be carefully lifted, dried, and stored in sand in a dry, cool cellar, or underneath the stage.

Cannas. See under Caladiums.

Crape Myrtle to be taken up, potted or placed in boxes, and then placed in a dry, cool cellar, and keeping almost dry at the root.

Dahlias. Treat as advised for Caladiums, but store in barrels in a dry, frost-proof cellar. See that the tubers are securely labeled.

Erythrinas. When injured by frost, cut the plants back to a proper shape, lift carefully, place in boxes in a dry frost proof cellar.

Euonymus. Treat as directed for Aucubas.

Flower Beds and Borders. Let tidiness adorn these by removing the plants as they receive injury from frost, and neatly leveling off the surface. Herbaceous plants to have the ripened leaves and stalks promptly removed. Have regard to proper labeling.

Gladiolus. After some sharp frosts take up the bulbs, dry, clean off, place in paper bags and store in a dry, cool situation away from frost.

Hardy Herbaceous Plants. Early October is a good season to take up, divide and reset many of these, and Paeonias especially. Before replanting, let the borders or bed be properly manured, and worked over; seeing to it in the planting that the same kind does not come to its old spot.

Hydrangeas. Treat like Crape Myrtle.

Lemon Verbenas. Treat like Crape Myrtle.

Mirabilis. Treat the same as Dahlias.

Planting. All the hardier shade trees, shrubs, etc., may be set to advantage on drained soil in the autumn, if done before November 1st. The work may begin as soon as the leaves show maturity by their color, while such as persist in hanging should be stripped off by hand.

Pomegranates. Treat like Crape Myrtle.

Tigridias. Treat as advised for Gladiolus.

Tuberoses. Can be treated as advised for Gladiolus, but must be placed where they can be given an average temperature of 50 degrees.

Vases and Hanging Baskets. To be emptied of their contents, thoroughly washed and dried, and placed under cover.

Walks. Let them be kept clean, rolled, and with the margins neatly trimmed in autumn.

Weeds will require attention to the end, for some sorts thrive amazingly in autumn weather.

PLANT CULTURE UNDER GLASS.

Ardesia crenulata. To increase the stock, sow the seed as soon as ripened.

Azaleas should now have a cool, airy place, be carefully watered, with perfect drainage.

Bonvardias For free, early bloom give a temperature of from 55 to 60 degrees. Less heat will make fine flowers, but later. Syringe freely and with active growth give liquid manure weekly.

Cacti. With the exception of Epiphyllum truncatum and its varieties, water sparingly, and give a light sunny situation, a temperature of 55 degrees and liquid manure at times.

Camellias. The foliage to be kept thoroughly washed with daily syringing. There must be no stint of water at the roots.

Ceatrums. When they cease blooming store under the greenhouse, or place in cool, dry cellar.

Chorozemas and similar hard wooded plants should be placed in a cool part of the house and given water more sparingly. Still when they need water let it be freely applied.

Chrysanthemums. Do not crowd the plants. Give liquid manure until the first flowers open, none afterwards. Keep the plants cool, and give air freely. Fumigate occasionally.

Cinerarias and Calceolarias. Repot promptly as needed. About the 15th move from the frames to the coolest part of the greenhouse, but where frost cannot possibly touch them. They need liberal supplies of water, and some liquid manure. Keep near the glass; air freely.

Climbers, such as Mannettia bicolor, Thunbergia Harrisii, and the like, to be kept tied up. Use liquid manure for promoting free growth.

Cyclamen Persicum now need a light, sunny position close to the glass.

Diosma Fragrans. Treat as for Chorozemas.

Ericas. Treat similar to Chorozemas.

Euphorbia Treat as advised for Poinsettias.

Fuchsias. The bloom over, store the plants under the greenhouse stage, or better still, in a cool, dry cellar. The winter bloomers now to go into their flowering pots. A well drained light rich soil and sun are among the essentials.

Gardenias. Place where they can be given 55 degrees of heat. Water sparingly

Geraniums for winter bloom to have a light, sunny situation, and an average night temperature of from 45 to 55 degrees.

Heliotropes. Treat as advised for Bonvardias.

Insects require constant attention to keep them down. Fumigate the houses twice a week for Aphis, and use the syringe freely to keep the Red Spider in subjection. Scale and Mealy Bugs must be removed by washing.

Ixias, Sparaxis, and similar bulbs may now go into well-drained pots filled with turfy loam.

Jerusalem Cherries. Above all else water freely, for drought causes the berries to drop.

Lachenalias. Pot now for bloom from January to March, treating as advised for Ixias.

Oxalis. As soon as potted bulbs start into growth, water freely, place in a light sunny situation where an average temperature of 50 degrees is maintained. Then they will bloom well from December to April.

Poinsettias. A night temperature of less than 60 degrees will not suit them, while some higher will do no harm. Liquid them twice a week.

Roses. For cut flowers to be syringed daily in bright, sunny weather. Avoid cold draughts of air. For spring blooming lift and pot about the middle of the month, place in cold frame to protect by sashes from extremes of cold and wet.

Salvias. The old S. splendens, particularly if given a favorable situation, free watering, and occasionally liquid manure, will do their share to brighten the plant houses for some time yet.

FRUIT GARDEN AND ORCHARD.

Apples. Winter Apples should be left on the trees until freezing weather is expected, then hand pick carefully and place in clean barrels. Store in a dry, cool room where air can be freely given. Keep all imperfect fruit from the sound.

Blackberries, Raspberries, Currants and Gooseberries should not be deeply cultivated now, but if any weeds make their appearance cut them out with a sharp hoe.

Budded Trees must be looked over, as they are apt to be girdled by the matting of budding.

Cuttings of Currants, Gooseberries, Grapes and Quinces may be put in as soon as the wood is ripe. Let them be five or six inches in length, and place in rows about two feet apart, the cuttings being two inches apart in the row. Keep the top eye even with the surface.

Fall Planting. While fall planting is not to be recommended for Strawberry plants on a large scale at the North, the setting of Grapes, Raspberries, Blackberries, Currants, and all trees but stone fruit kinds may be urged on drained land in the fall, banking up with a little earth when set, and drawing the bank away in the early spring. Plants and trees thus set in the fall will in the average season make double the growth, and are far more certain to live than when set in the spring.

Grapes. Gather when well ripened and only when dry, carefully removing all decayed and imperfect berries. The thin skinned varieties will not keep long and should be disposed of as soon as possible. The varieties with thick skins should be packed in small boxes and stored in a dry, cool room.

Pears. Winter Pears should be treated as advised for Apples, but instead of placing them in barrels it is advisable to use boxes or crates.

Strawberry Beds will yet require attention. Keep all runners off from beds grown on the stool plan, and hoe frequently.

VEGETABLE GARDEN.

Asparagus. About the end of the month clean away growth and dress with manure.

Beets Take up before hard frosts, cut off the leaves an inch from the crown and store in sand in a cool cellar. Do not bruise the roots.

Broccoli approaching maturity should be protected from sun and dew by closing the leaves over the heads; also to blanch them better.

Cauliflower. See under Broccoli.

Celery should now be in its rapid growth, and requires due attention to keep it properly earthed up. In earthing keep the soil from the heart or center of the plant. The late winter crop will require only to be handled, the blanching taking place in the winter trenches.

Chicory, for use as a salad in winter, should be taken up by the end of the month and stored in sand in a dry, cool cellar.

Egg Plants and Peppers. The supply of these may be prolonged by carefully lifting and bringing under glass before frosts.

Endive. Take up carefully with a ball of earth to each plant, and place close together in cold frames, where they can be blanched as wanted for use. They must be kept dry and given an abundance of air, or rotting will ensue.

Neatness should be maintained to the last. As soon as a crop has been used, gathered, or destroyed by frost, let the remaining part be removed and the ground deeply plowed or forked up. This will not only destroy many weeds (as Chickweed, etc.), but more fully expose the earth to the action of the frost and air.

Pumpkins and Squashes. Store in a dry, cool situation, but where there is no danger of their being touched by frost.

Rhubarb. Treat as advised for Asparagus. See Vegetables Under Glass.

Spinach. The new crop for spring should be kept cultivated and be thinned as required.

Sprouts, Winter or Siberian Kale. Directions for Spinach will apply.

Stakes and Poles should be gathered up and placed under cover as soon as they are out of use.

Sweet Potatoes. Dig before heavy frost, handle carefully, store in a dry, rather warm place.

Tomatoes. Protect some plants by frames and sashes, to obtain fruit for a longer period. Or the vines can be pulled up, laid under sashes, where much of the fruit will ripen.

Turnips. Cultivate to ensure rapid growth.

FRUITS AND VEGETABLES UNDER GLASS.

Figs. After the crop is gathered reduce the supply of moisture both overhead and at the roots.

Grapery. The earliest houses are in a state of rest; keep them as cool and dry as possible. Prune the successional houses as soon as the leaves begin to fall. Clean off the canes. Clean, repair and repaint all wood work at the earliest opportunity. In the late houses the crop will be about ripe, and they should be kept dry and cool. Watch the fruit carefully and remove all decaying berries the instant they are noticed.

Guavas. Water well as required. Neglect here may cause the loss of the entire crop.

Lettuce. Plants from the August sowings can be set out for the earliest crop. Those raised from the September sowings to be pricked into cold frames in rows an inch each way.

Oranges, Lemons and Limes. Keep the trees thoroughly clean with soapy water. Thin out the fruit if necessary. Liquid manure can be used occasionally with benefit.

Parsley for winter use can yet be secured by carefully lifting the plants and placing them in a cold frame. Some boxes can be filled and placed in the greenhouse or kitchen window. Four inches apart for the plants will answer.

Peaches and Nectarines in cool or slightly heated houses should be given an abundance of air in order to properly ripen off the wood. Trees in tubs to be treated like Figs.

Rhubarb. For winter forcing lift the roots towards the end of the month and store in frames or cellars until wanted.

Strawberries. If not yet done, repot into 6-inch pots and plunge in coal ashes in an airy place.

POINTS ABOUT POULTRY.

Worms. A writer to the Mirror and Farmer suggests that a tablespoonful of common wormseed, from the drug store, fed in the food of ten hens once a day will relieve them both of flesh and intestinal worms.

Combs unnaturally dark indicates a congested state of the system, and which can be cured by giving small doses of Epsom salts twice on alternate mornings, soaking some grain in the water in which the salts have been dissolved.

Either Beans or Peas, which analysis show to be about equal in nourishing properties cooked, or better, ground and mixed with wheat bran or ground oats, and scalded, is a good food for poultry. It is a good, cheap egg food. Though hens do not generally accept of whole beans readily, yet we have seen them fed upon them exclusively and they throve and laid remarkably.

Flying the Fence. Some hens, according to the Mirror and Farmer, can fly over a seven-foot fence, and when once begun others are also taught. If a piece of wire be placed on a line with the fence, but six inches inside of the yard, it will prove effectual against flyers. A hen attempting to fly goes for the top of the fence, and pays no attention to the strand of wire, which she strikes and falls back. After striking the wire two or three times she becomes disgusted.

The Tax of the Moulting. All fowls shed their feathers annually; in the case of the growing chick, several times in the first six or eight months of his life. This making of new feathers costs almost as much vital energy as the formation of bone and muscles. This is easily proven by examining a flock of moulting fowls and noticing their emaciated condition. It is more trying on old fowls than on chicks. They often droop and become really sick before they are through moulting. Food of a stimulating nature should be abundantly supplied. Not a great amount of corn but plenty of wheat, oats and mixed food. A liberal supply of bone or shell meal is good. Plenty of shade and a cool roosting place is desirable. This by the Practical Farmer.

To Preserve Eggs in Salt. The prizes so far the past year for preserved eggs have, whenever they have competed, been awarded to those preserved in salt. The method follows: Use dry, fine salt; place a layer on the bottom of a keg deep enough to set the eggs on the large ends, side by side; then cover with salt, thus alternately putting in a layer of eggs and a layer of salt. The salt being dry runs all about the eggs, and, if kept in a dry cellar, lowers their temperature. When the keg is full, put on the lid tightly. This will keep eggs for six months, which secures them for use an entire winter, or carries them from a dull to a high market. It is the cheapest and best method, and the eggs are fresh, sweet and as good, for all purposes but hatching, as fresh eggs. —Our Country Home.

Hints for Autumn. Carelessness in little details will soon show in the condition and productiveness of the fowls. Many early pullets are laying now, and most of the moulting fowls have new feathers. Many fanciers, we venture to say, have made no provision for the comfort and maintenance of their poultry for the coming winter. This month suggests certain duties that are obligatory, because the weather in our northern climate becomes colder, and the fowls have to be protected from the chilly winds that are so searching to all animal life. True, most acclimated adult fowls are hardy, if in good health, and able to withstand a deal of sharp cold if accustomed to out-of-doors hilarity all along, but it is the sudden and sometimes unlooked for changes from moderate to severe cold, from sunshine to cold rains, and from a dry atmosphere to chilling dampness, that we must guard against to avoid roup and other ills now.—The Poultry Monthly.

INQUIRIES AND REPLIES

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following. Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

443. **Renovating Old Grape-vines.** Please advise as to how to do this.—L. H. W., *Luzerne Co., Pa.*

444. **Cypripedium Insigne.** Will you please tell me how to pot and care for Cypripediums. Do they require much water in bloom?—E. M. R., *Algona, Iowa.*

445. **Double White Feverfew.** What shall I do with the plants to have them in good condition for bloom next summer? Are they hardy enough to remain out or will they keep better in the cellar?—X. Y. Z.

446. **Grubs in Strawberry Land.** I wish to prepare some creek bottom land badly infested with white grubs this fall for Strawberries. What I wish to know is how to get rid of them? I understand that salt and fall plowing are the remedies. When and how to be applied?—C. L. M., *Ellsworth, Kan.*

447. **Troublesome Grass in Lawn.** A strong, coarse grass that enlarges from the root in the form of a bowl, and the tops of which are a brownish color, has invaded my two year old seeded lawn, and is destroying its beauty. Cutting out seems an endless task. Would increased fertility be likely to drive it out. The soil is a sandy loam.—J. W. F., *Boston, Mass.*

448. **Dark Worms in Pots.** Some such of a small size are troubling my Begonia at the root. How are they to be gotten rid of?—G. S. P., *Fort Randall, Dak.*

449. **Managing a Fruit Farm.** Through circumstances beyond my control until too late I became owner and manager of a young fruit plantation representing when in nursery trees as furnished by an agent (unreliable I regret to say) $500 worth of planting stock, and I find myself knowing little about culture, hence in need of advice. The plantation embraces Pears, Plums, Quinces and small fruits. After one season, from lack of close attention it has become quite weedy, but the trees, etc., are looking very well. (*a*) Had they best be weeded? (*b*) Shall I put stable manure around my Currants, Quinces and Blackberries. (*c*) Shall I cut my Pears, Plums and Quinces back any this fall. Answers would greatly oblige.—G. T., *Richland Co., Ohio.*

450. **Gladiolus Failing.** While my Gandavensis variety flowered well, a dozen Purpurea aurea planted near by did not give a single bloom; some plants rot even when coming up. Can you ascribe a cause.—L. H. J., *West Virginia.*

451. **Wintering Plants.** I have no greenhouse, but have a fairly light, frost proof cellar, and also a small upper room with western exposure, that a hall stove keeps from freezing, while with a lamp I can keep the temperature up to about 50 degrees. I have Geraniums, Fuchsias, Solanums, Abutilons, Tea and Miniature Roses, etc., all in the open ground; also some young Geraniums that have been kept pinched back to prepare for winter flowering. The question is how had I best care for the outdoor plants to merely keep them over, and also would the room described do for the young Geraniums to bloom in? Please advise my ignorance.—SUBSCRIBER, *Yonge street, Ontario.*

452. **Marvel of Peru.** I would be glad to receive directions for cultivating this plant and keeping over the roots.—J. G., *Washtenaw Co., Mich.*

453. **Home Grown Tobacco for Fumigation.** I have grown a quantity and desire to know whether it would be of use in ridding a plant house of insects.—M. E., *Monroe Co., N. Y.*

454. **Pear Tree Scale.** How can I destroy this pest on my trees. They are smothered with it and do not yield to soft-soap and water.—ANXIOUS.

455. **Flowers in Winter.** I have a cool greenhouse with a temperature often as low as 40 degrees, but never to frost. How under such circumstances can I have a few flowers in midwinter. I would like suggestions?—R. G., *Bucks Co., Pa.*

456. **Effects of Leaf Fall on Fruit.** Some of the Pear trees in my garden have shed their leaves, the fruit not being fully grown. Will it ripen?—BEGINNER.

457. **Green Fly in the Rose House.** Fumigating is objectionable in destroying these, as it gives a smoky odor to the flowers. What can be employed in its stead?—G. R. L., *Springfield, Ill.*

458. **Fig Culture North.** I would be grateful for light on the propagation and care of the Fig. How low a degree of cold will they stand without injury? Must they be laid down before frost, or not until we lay Grapes and Blackberries?—A. W., *Rondaha, Iowa.*

459. **Protection from Rabbits.** Can you inform us of an effective remedy against these in their attacks on trees, Blackberry canes, etc.—T. R. V., *Muscotah, Kan.*

460. **Vinegar Eels and "Mother."** Can you inform us how the presence of these is to be accounted for in vinegar?—G. L. C., *Wilmington, Del.*

461. **Canning Sweet Corn.** I would be glad to see the best method for this described, as our own practice has not been successful.—E. G., *Hartford, Conn.*

462. **Cultivating the Currant.** I believe that Currants could be grown profitably for market in this place, and would appreciate any points on their culture that any reader might give.—A. E. T., *Ypsilanti, Mich.*

463. **Plants for Rock Work.** We are about starting an outdoor rockery, and apply to you for a list of the best plants.—C. C. R., *Williamsport, Pa.*

464. **Failure with Lilies.** I started out to enlarge my collection of this favorite flower considerably a year ago, but have not met with the success aimed for, losing many of the bulbs the past winter. Will you kindly favor me with some hints on their culture out-of-doors; also in pots?—H. A., *Lancaster, Pa.*

465. **Pruning Dwarf Pears.** What course do you advise as to pruning these?—C. W., *Niagara Falls, N. Y.*

466. **Manuring Rhododendrons.** Knowing that these as well as the hardy Azaleas are not the most easy plants to manage, I would like advice as to the method of manuring them in open ground.

467. **Pears from Seedling Trees.** In how many years may I expect to get fruit from such?—W. A., *Xenia, Ohio.*

468. **Protecting Shrubs, etc.** As the season for covering these is near I apply for directions to cover a variety of shrubs and hardy plants set in the spring.—W. W., *Onondaga Co., N. Y.*

469. **Cutting Scions.** Which is the better time to cut grafts for spring use, fall or winter?—TYRO.

470. **Sweet Peas Failing.** I have had no success with this annual early in the season, the buds blighting before they opened. Lately some flowers appeared. How can this be avoided in future?—LAURA.

REPLIES TO INQUIRIES.

429. **Peas for Canning.** In this vicinity Peas are often raised for canning establishments. They are considered a profitable crop at one dollar a bushel, which is the price usually contracted for. The producer has to pay twenty-five cents a bushel for picking and deliver them at the establishment. In addition to this he has to assume all the other expenses, such as purchasing seed, manure, etc., and the labor connected with the proper cultivation of the crop. Land here rents from eight to ten dollars per acre.—CHAS E. PARNELL, *Queens, L. I.*

424. **Killing Shrubs.** Cut or break off the young sprouts while they are young and growing rapidly.—C. E. P.

434. **Wire Worms in Carrots.** No remedy can be applied to save the remainder of the crop. In the fall clean off every thing and give the ground a heavy dressing of lime, wood ashes or any concentrated or commercial fertilizer. Harrow it in thoroughly. This will banish them.—C. E. P.

428. **Budding Query.** The inner bark should be cut through to the wood.—C. E. P.

411. **Rosebuds Blasting.** Instead of taking up the plant annually, let it remain outside where it is growing, and protect during the winter if necessary. With this treatment the buds will not blast.—C. E. P.

412. **Clitoria Marianna.** This is a perennial and can be propagated by seeds or cuttings.—CHAS. E. PARNELL, *Queens, L. I.*

430. **Squashes Failing.** They were destroyed by the root borer. The following is an excellent preventive: Dissolve an ounce of saltpetre in a gallon of water, and as soon as the young plants appear above the ground thoroughly saturate the hill with this mixture. Repeat the operation three or four times at intervals of five or six days. If at any time afterwards the vines show indications of wilting treat as advised for young plants.

421. **Sea Weeds in Compost.** The little salt contained in the sea weed will prove beneficial rather than injurious, that is, if used in the proportion of one-third sea weed and two-thirds manure. Before applying let it be well decayed and thoroughly mixed.—C. E. P.

423. **Effects of Regrafting.** Regrafting will not change or have any effect or influence on the nature of the Apple.—C. E. P.

442. **Warts on Vine Leaves.** This is the result of too much moisture at the roots and a too close moist atmosphere. It is too late to apply any remedy now, but if the drainage is imperfect it should be attended to immediately. Another season reduce the supply of moisture inside and give air more freely. C. E. P.

432. **Propagating Clematis.** Amateurs can readily increase their stock by layering the half ripened wood. When the wood is in a proper condition place the shoots in any convenient situation, cut them partially through on the upper part and then open a shallow trench and fasten the shoots therein with a short peg, cover or fill up the trench with earth and place a flat stone over the layer to prevent the soil from drying out. Cover all slightly with evergreen branches during the winter and the next spring take up and replant. C. E. P.

426. **Hardy Catalpa for Timber.** This tree is proving profitable for timber culture in many places West, and we see no reason why it should not do so in Northern Ohio. Its chief value lies in its use for posts, railroad ties, etc., for which purposes it is claimed to possess very enduring qualities. We would, however, suggest that the future of forestry demands that other specimens of trees be grown as well as the Catalpa, a kind that is altogether being planted very extensively.

431. **Currants Losing their Leaves.** I think that their leaves became infested with the red spider in such numbers as to cause them to drop. My bushes often do the same. Still it does not appear to injure them in the least. C. E. P.

436. **Vinegar from Cider.** The chief points in the process of Vinegar making from cider as furnished by a very successful manufacturer are as follows: Cider exposed to the air soon meets with two changes, namely, the operation of the yeast principle causing the first fermentation, by which a little starch is converted into sugar, and almost simultaneously the stronger vinous fermentation and by which the sugar is converted into alcohol, and the solid matter is precipitated into the bottom or is thrown off from the surface when the cask is full and the bung is open. At this stage it will in a low temperature rest for a month or more, but with a rise of heat the third fermentation begins, by which the alcohol is converted into acetic acid the sour principle in vinegar. This change depends for its rapidity upon exposure to the atmosphere, as it is accomplished by the absorption of oxygen from the atmosphere, and is also greatly promoted by the addition of such substances which have already passed into the acetious state as vinegar itself, or by racking off into old casks that are thoroughly impregnated with acetic acid. Depending upon atmospheric exposure, as this change does, it will be much more rapid if the barrel is kept but half full than if entirely full. If, in addition, this amount is stirred vigorously with a stick daily the change will be yet more hastened. By causing it to fall drop by drop to a barrel below, or (for speed) better still, increasing the exposure, to have it filter through shavings or sawdust (Oak or Beach are recommended, but any kind that will not communicate taste will answer), the change is hastened to the highest practical degree. These latter methods are much employed in vinegar factories, but cannot be said to make the best quality of vinegar, as such can be distinguished by a peculiar stinging taste. The very best vinegar of good "body" and aroma requires more age and the slower processes. The acid fermentation is much more rapid also in a warm than a cold temperature. The only value of the slimy substance called "mother" is found in the acetic acid which it may contain, but this had better be provided in some other way; the makers of the best vinegar carefully remove it from the casks. Where on a small scale such equipments as have been referred to cannot be well provided, the best that can be done is to rack off the cider when the second or vinous fermentation is ended, half fill the casks, keep them in a warm place, stir them often, and when good vinegar is produced be sure that some be retained for use in hastening the manufacture of the next crop.

441. **Penstemons from Seed.** In raising these plants from seed, the most satisfactory results are obtained by sowing in pans and placing them in a frame, as the seed can then be placed under the conditions most favorable to its germination, and the seedlings be carefully nursed. Fill the pans with a mixture of loam, leaf mold and sand, and sow the seed thinly. When of a suitable size prick off into boxes filled with good soil, and in these allow them to remain until the spring, when they should be planted in the positions in which they are to remain. If more convenient you may put the seedlings singly in three-inch pots. The seed pans should have a glass laid over them and the frame be shaded with mats or canvas until the seedlings are strong enough to bear the exposure. A. H. E.

452. **Marvel of Peru.** It is easily raised from seed in the spring on a hot-bed, or in a greenhouse along with Balsams, Egg Plants, and similar things. The roots can be grown in pots the first year and left in them all winter if kept almost dry and safe from frost, or outside plants can be lifted and stored like Dahlias. The roots can be planted out in spring in the open ground, but it is safer to start them in growth first. The soil should be deep, friable, and well manured, and the situation sheltered, and the hottest that can be found for them. This plant offered in various colors is misleading. The name of "marvel" is given because it produces flowers of many colors in succession, the intermediate flowers being striped with two succeeding colors, for instance, when a plant is changing the color of its flowers from crimson to yellow the first flower which shows any yellow will generally be crimson, with a few yellow lines and dots; each succeeding flower will show more yellow until they come yellow entirely, after which another color will immediately begin to appear in dots and lines as before. The number of intermediate flowers between the selfs varies greatly—four is the smallest number I remember noticing. The roots become very large by the end of the second year, and being brittle are difficult to store, and had best be thrown away, starting young plants again from seed.

410. **Chrysanthemums Shooting Up.** It is best to remove the shoots as soon as they are noticed, until the flowers are all expanded, then they can be permitted to remain.—C. E. P.

375. **Small Fruits South.** In your answer to this query you leave out, to my mind and experience, the most profitable Strawberry for a warm climate. Whether for home use or shipping, and I have tried a great many varieties, there is none that equals the Jumbo, a stout, hardy, vigorous plant, free from rust, good vine, a fair size, delicious flavor. DR. V. S. MACNIDER, *Jackson, N. C.*

420. **Moon Flower.** Although I cannot answer the questions lately asked in your columns concerning this plant, and myself desire to know more about it, I take the liberty of writing you in regard to one of my own. This has formed quite a curiosity and some think it far superior to the Night Blooming Cereus as a night flower. The flowers with us bloom about half past six, just about the time we have supper, but everything has to wait when the flowers are coming out and sometimes supper is much deferred to watch it bloom. It was planted May 26th and bloomed for the first August 16th, at which time it had grown all over the back of the house. It is now, August 30th, easily 25 by 40 feet in size. From the 16th to the 29th of August it has had 12 flowers, each one from five to six inches across. I have had many climbing plants, but never one to grow like the Moon Plant. M., *Brooklyn, N. Y.*

433. **Pruning Paesion Flower.** If the plant is growing in a light, sunny situation where it can be given sufficient heat and moisture, the flowering shoots may be cut back and all weak wood removed, then with a month or six week's rest the plant may be started into growth, and another crop of flowers obtained. C. E. P.

437. **Stephanotis Culture.** Your plant is passing into a state of rest, and I am of the opinion that you are giving it too much water at the roots. When the plant is at rest it should be kept dry at the roots. You might give your plant a thorough washing with soapy water, and if the shoots are very much crowded remove some of the weaker ones. C. E. P.

441. **Penstemons from Seed.** Under glass the seed should be sown as early in the season as possible. Sow thinly in a well drained pot or pan filled with turfy loam. Cover slightly and place in a warm, moist situation as close to the glass as possible. Water carefully as required, and as soon as the young plants are strong enough to handle transfer them into shallow boxes or pans similarly prepared, and placed in rows an inch and a half apart each way and grown on until the weather becomes warm and settled, when they can be planted out in a nicely prepared border. Or the seed can be sown in a nicely prepared cold frame, early in April, very thinly, and if the young plants are not too close together they can be grown on here until they are large enough to be planted outside. With this treatment, however, many will not bloom until the second year, and as not many of them are hardy (in this vicinity) they should be taken up about the end of October and placed in cold frames to be wintered over. C.E.P.

448. **Dark Worms in Flower Pots.** Reference is had to angle worms, no doubt. These, as well as any other soft skinned kind, may easily be destroyed by soaking the soil thoroughly with clear lime water. To prepare the water drop a piece of fresh lime the size of a fist into a bucket of water, and after the solution clears by settling apply the clear water. Another kind of worm that sometimes infests flower pots may be killed, it is said, by applying a solution of mustard water, a teaspoonful of mustard to a pint of water, to soak the ball. We have heard of a case where the phosphorus ends of matches stuck into the soil expelled the worms.

459. **Protection from Rabbite.** Of various remedies in the shape of washes that have come up for this purpose, it is believed that none equals that of crude petroleum in which a small quantity of Paris green or strychnine has been mixed, painting this on the parts liable to be affected. It has no injurious effect on the bark. Petroleum alone is quite safe and usually effective, but for some reason it sometimes fails. A wash of tobacco, quassia, or soap water answers the same end until removed by rain. Linseed oil is often recommended, but this has been known to harm young trees. The writer recalls a method described in a French journal some time ago for guarding trees against rabbits and which is illustrated herewith. It consists simply of Willow branches a half inch or so in diameter, cut in lengths of two or three feet and with their lower ends thrust in the ground and the uppers fastened by twisting in some small switches. The bark of the Willow is bitter and the rabbits will not touch it, while they cannot get to the tree to gnaw the bark.

Protection from Rabbits.

451. **Wintering Plants.** Such a room as you describe would be an admirable place for plants during the winter and the young Geraniums should thrive well here. A house room which thus derives its heat indirectly, and of the temperature you speak of, is preferable to one having the heat supply within its walls. If the object, however, is merely to keep over the plants with the least trouble, not caring for their beauty in the winter, the cellar would answer well. We have no faith in any method of wintering Geraniums (such as laying them with bare roots on shelves, etc.), aside from setting the roots compactly in earth, pruning the tops back fully one-third at the same time. The soil should be kept fairly moist in winter, but not wet.

303. **Rings in Wood Indicating Age.** Concentric or annual rings, which were accepted as good legal evidence, fail, except where climate, soil, temperature, humidity and all other surroundings are regular and well balanced. Otherwise they are mere guesswork. Annual measurements of White Elm, Catalpa, Soft Maple, Sycamore, Cotton-wood, Chestnut, Honey Locust, Oak, Walnut, Pine, Red Cedar, and Mulberry made in Southeastern Nebraska, show that annual growth is very irregular, sometimes scarcely perceptible and again quite large. As trees increase in age inner rings decrease in size, sometimes almost disappearing. I have found twelve rings in a Black Locust six years old, twenty-one rings in a Shell bark Hickory of twelve years, and only twenty rings in a Chestnut Oak of twenty-four years. An American Chestnut of only four years had nine rings, while a Peach of eight years had only five rings. Dr. A. M. Childs, of Nebraska, a careful observer for the Smithsonian Institute, who counted rings on some Soft Maples eleven years two months old, found on one side of the heart of them forty rings and not less than thirty-five anywhere, which were quite distinct when the wood was green, but after it had been seasoned only twenty-four rings could be distinguished. Another expert says that all our northern hard woods make many rings a year, sometimes as many as twelve, but as the last set of cells in a year's growth are very small and the first very large, the annual growth can, by the appearance, be determined, except when from local causes there is in any particular year little or no cell growth. R. W. FURNAS, *of U. S. Forestry Department.*

461. **Canning Sweet Corn.** To do this successfully is a rather more difficult undertaking than to can fruits, although the process is simple. Cut the Corn off the cob with a sharp knife and put into fresh water and bring to a boil. When it comes to a boil ladle it into the cans with as little of the water as possible and then while hot solder the top on—leaving in the center of the top a hole as large as a pin, then set the cans in hot water, not deep enough to cover them, and boil for two hours. At the end of that time take up and seal the vent hole with solder while steam is still coming out. A. H. E.

453. **Home Grown Tobacco for Fumigation** Certainly it can be used. The leaves should be dried by removing the mid-rib, and laying them out or hanging in an airy shed. When they are well dried gather them together in the morning and press them firmly into a box or barrel. If the leaves are dried in the sun they crumble into powder on being touched.

454. **Pear Tree Scale.** This scale is often very troublesome. It must be scrubbed off with a brush and soft soapy water. It will come off easier if the trees are well douched with hot water first. Water at 130 degrees or more will do the wood no harm after the leaves drop; a little sand may be added to the water that is used to scrub the scale off. A. H. E.

455. **Flowers in Winter.** The best flower for a cool house to bloom in winter is the Chinese Primula, both red and white varieties, and which properly grown comes into flower by December, lasting all through the winter months. Either sow the seed in April or procure plants later on, growing them according to the directions more than once given in this journal. Another fine winter flower is Paris Daisy Etoil d'Or; if grown into good plants by autumn will bloom all through winter and spring. Then there are winter flowering Tropæolums and Cyclamens, and late blooming kinds of Chrysanthemums, such as Fleur-de-Marie, Mrs. C. Carey, and others. Everything intended for winter bloom must be taken in hand in spring, so as to get the plants strong by autumn.

356. **Propagating Double Nasturtiums.** The young rather slender growths which have not flowered, and which generally spring from the base of the plants, strike readily in summer and early autumn, inserted in sandy soil, and kept close in a frame. Keep the soil moist, and give a little air for an hour or so in the morning. A.H.E.

445. **Double White Feverfew.** This is a half-hardy perennial, not to be trusted out in the average of seasons, but we have seen it live over. The best place for it is a well protected pit or greenhouse that is not too damp. We think it would winter in the cellar with the same treatment as Geraniums require, but should prefer giving it the lightest place here.

446. **Grubs in Strawberry Land.** We have known land that was badly stocked with white grubs to be completely cleared of them by turning the soil over loosely in November, they freezing to death. With the salt remedy we have had no experience, but our fears would be that this or any similar dressing strong enough to kill the grubs would be injurious also to plant life.

418. **Sheldon Pears Cracking.** The disease known as "cracking of the fruit" attacks some sorts more than others, and is more liable to occur in some localities and on some soils than others. It is generally believed to be caused by a minute fungus. The life history and mode of propagation of this fungus are not known, and no remedy has been found to prevent its attacks.

449. **Managing a Fruit Farm.** It certainly was bad business for one who knows "little about fruit culture" to have the responsibility of a large, young plantation placed in his hands, with a view to early profitable management. Fruit growing is a trade which cannot be mastered to make money without a great deal of schooling; hence, where the advantages of an extended service on a fruit farm have not been enjoyed, we have more hope from those who work into it gradually from a small beginning than from those starting off on a large scale but in ignorance. Then again the fact that your agent was a man not to be depended upon gives the case even a darker aspect, for what assurance can there be that the stock is reliable, or the varieties at all adapted for marketing purposes or for your section. But having begun the enterprise your only way is to make the best of it, and by industrious inquiry, observation, reading and work to make up for the elements of weakness in the case. As for your direct question we would say, (*a*) by all means observe clean culture; this may be done through planting tillable crops, provided the proper richness of soil is maintained both for the trees and crops. (*b*) A mulch of stable manure would unquestionably have a good effect on Currants, Blackberries and Quinces, for it would provide both fertility and moisture and would keep down the weeds. (*c*) For young trees of one season's growth we prefer pruning in early spring to fall.

461. **Failure with Lilies.** As you do not state the character of the soil in which your Lilies were grown, it is not easy to give you a remedy; but should infer that they had been planted where water had covered them during the winter, and exposed to alternate freezing and thawing, which is very injurious. They will bear a hard frost, but when once frozen in the ground should remain so until spring. We think your bulbs can be restored to their usual vigor by transplanting them, as soon as the tops are dead, in a compost prepared as follows: Take equal parts of loam and leaf-mold well decomposed; pull this to pieces with your hands until the fibrous portion is thoroughly broken up and mixed with the leaves; add to this about one-sixth of its bulk in sharp, clean sand, all of which should be thoroughly intermixed. If for pot culture, the soil should be firmly pressed around the bulbs, which should be covered about an inch from the crown; do not omit a few crocks in the bottom of the pot for drainage. If designed for culture in the garden, choose a situation where water will not stand during winter, nor where it is very dry during summer; excavate a portion of the soil a foot deep, which should be replaced with the above compost, and the bulb covered to the depth of four inches from the crown; cover during winter with leaves to the depth of eight or ten inches, which may be removed as soon as the frost is out of the ground in spring. The same treatment will answer for the Auratum. It will, perhaps, be as well to cultivate this variety in pots, and winter in a cool, dry cellar. Plant out as soon as the ground can be gotten ready in spring.

470. **Sweet Peas Failing.** We can explain the blighting of your Sweet Peas before opening only on the ground that the soil was too rich, causing too luxuriant a growth; and the strength of the plant went to leaf, and not to flower, until the heat of summer somewhat checked the growth, when more flowers appeared. This is not uncommon with this flower and especially in a wet season. Try a poorer and if possible a sandy soil and I think you will succeed better. A. H. E.

Received at this Office.

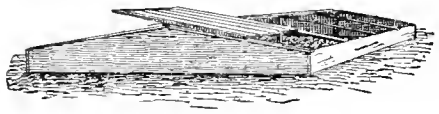
CATALOGUES, ETC.—FIGURES INDICATE PAGES.

Thos. J. Ward, St. Mary's, Ind., Nursery; 4.
Albertson & Hobbs, Bridgeport, Ind., Nursery; 8.
John Lewis Childs, Floral Park, N. Y., Bulbs, etc.; 28.
L. Templin & Sons, Calla, O., Bulbs, etc.; 24.
W. C. Beckert, Allegheny, Pa., Bulbs, etc.; 20.
Peter Henderson & Co., New York City, Bulbs, etc.; 41.
Cleveland Nursery, E. Rockport, O., Nursery; 22.
M. J. Graham, Adel, Ia., Nursery; 6.
Bloomington Nurseries, Bloomington, Ill., Nursery; 20.
Girard Nursery Co., Girard, Kas., Nursery; 4.
S. M. Bayles, St. Louis, Mo., Nursery; 12.
J. A. Roberts, Malvern, Pa., Nursery; 4.
Mt. Arbor Nursery, Shenandoah, Ia., Nursery; 8.
Joel Horner & Son, Merchantville, N. J., Nursery; 2.
Dambman Bros. & Co., Baltimore, Md., Fruit; 16.
Geo. L. Squier Mfg. Co., Buffalo, N. Y., Windmills; 16.
W. C. Wilson, Astoria, N. Y., Plants, etc.; 24.
Thos. S. Ware, London, Eng., Daffodils and Lilies; 28.
Hiram Sibley & Co., Rochester, N. Y., Seeds; 4.
H. E. Van Eps, Peoria Ills., Window Shelves; 1.
Thos. S. Ware, London, Eng., Bulbs; 64.
J. M. McCullough's Sons, Cincinnati, O., Bulbs, etc.; 32.
H. S. Anderson, Union Springs, N. Y., Nursery; 8.
Shady Hill Nurseries, Cambridge, Mass.; 104.
P. J. Berckman's Nursery, Atlanta, Ga.
Chas. A. Reeser, Springfield, O., Bulbs and Plants; 31.
Haage & Schmidt, Erfurt, Prussia, Seeds; 44.
J. Jenkins, Winona, O., Nursery; 10.
Oscar R. Kreinberg, Philadelphia, Pa., Seeds, 8.
Webl & Co., Lyndonville, N. Y., Small Fruits; 8.
Schlegel & Fottler, Boston, Mass., Bulbs, etc.; 16.
Parker & Wood, Boston, Mass., Small Fruits, Bulbs; 8.
Hiram Sibley & Co., Rochester, N. Y., Bulbs; 8.
Geo. A. Schultz, Jamesburg, N. J., Peaches; 1.
Hillside Nursery, Marksville, La., Nursery; 4.
Stecher Lithographing Co., Rochester, N. Y., Trade Supplies; 20.
"List of Premiums Montreal Horticultural Society." W. W. Dunlop, Secretary.
"Fifth Biennial Report of the State Board of Agriculture, Kansas." 1885-86. Wm. Sims, Secretary, Topeka, Kansas.
"Transactions of the Massachusetts Horticultural Society for 1886; Part II." Robert Manning, Secretary, Boston, Mass.
"Department of Agriculture Report, 1886." Norman J. Coleman, Washington, D. C.
"A List of Ornamental Plants which are hardy in Michigan." L. H. Bailey, Jr., Agricultural College, Michigan.
"Transactions of the Wisconsin State Horticultural Society." 4 Volumes. Geo. J. Kellogg, Janesville, Wis.
"Commercial Fertilizers Inspection of 1887." Being Bulletin No. 27 of the Agricultural College of Michigan. Agricultural College P. O., Michigan.

The Span-Roofed Frame or Pit.

A very common form of frame or cold pit is that in which the length of a single sash governs the width of the frame. One of twice this width and having a span roof is employed in some places, and has at least one great avantage over the single sash frame, in that the dead or interior space at the back of the frame is lessened.

The frame to which we refer is made with ends, as shown in the engraving. A piece of joist is used as a ridge, and this is supported by stakes driven into the earth. Into this the upper end ot the cross-ties that support the sash are mortised, the lower ends



A Span-roofed Cold Frame.

being let into the front board as in ordinary frame making. By the use of six-foot sash the bed will be nearly 12 feet wide. Frames thus arranged will with some saving of lumber in the making and with no more care to manage, grow considerable more Lettuce or other plants per sash than in the ordinary kind.

This principle of frame making is about as well adapted to pits, hot-beds and other uses as it is to ordinary cold frames. They have been used with good results in wintering half hardy Roses in pots, causing less of the plants to become drawn one-sided during the spring growth than is the case with Roses in the ordinary style of frames.

Culture of Specimen Fuchsias.

The English gardeners having long been famous as growers of fine Fuchsias, we take pleasure in giving the following account of the practice abroad as given in a recent issue of Gardening Illustrated.

The cultural details requisite to ensure success even in growing noble specimens 8 feet high 4 feet through, and loaded with handsome foliage and flowers are by no means difficult of accomplishment. But no treatment of the Fuchsia can be more interesting than that pointing to the raising of small specimens in 5-inch pots,such as is done so nigh perfectly by the growers of Covent Garden Market. The following simple directions may be followed with confidence.

The Start.—Cuttings consisting of rather soft shoots should be taken off at the end of August, or early in September. Kept close in a frame, they will soon form roots, when they should be potted off singly into small 3-inch pots, still using a light sandy soil for them. After this, place them in a rather close, warm position for a time, and gradually increase the ventilation as growth progresses; this growth must be regularly pinched in to form a bushy foundation.

When the plants have filled the small pots with roots, shift again into 5-inch ones; use the compost rather heavier than previously. At all times give plenty of drainage in the pots, as the Fuchsia, although needing much water, dislikes stagnant moisture about the roots. During the winter but little has to be done beyond keeping the plants clean and free from insects, and just sufficiently moist, and in a temperature to prevent leaf fall; then the young plants will start growth the next spring with remarkable vigor.

The First Flowering Year.—We will now suppose that March has arrived, fresh growth has commenced; the plants may be shifted into pots a size larger than before, using turfy loam, some decayed manure, a little leaf-soil, and sharp sand, this compost answering for all future stages. If a light house is available with a bed of fermenting material, leaves or tan therein, then place the plants on this for the benefit of the genial moisture and warmth, maintain a brisk temperature in the house and ply the syringe freely to the plants. The stopping and arranging the shoots must now be regularly attended to. The leading shoot should always be allowed to grow on a bit in advance of the side branches. By the end of April they may go into larger pots comparative to the strength of the plants. Keep them growing freely, shading lightly in bright weather. Cold draughts must be avoided, or much of the beauty will be lost.

By the end of May they should be ready for their final shift into 8-inch or 10-inch pots. Firm the soil moderately at this last potting. When commencing growth again they will probably begin to show buds freely, which must be promptly removed, or growth will be arrested.

By the first week in June they should have grown into large plants,and should be placed in their summer quarters. A level spot of ground should be selected that is sheltered from strong winds, but exposed to the sun and air. A firm bed of coal-ashes must be first spread for keeping worms out of the pots. The pots should be plunged in coal-ashes or similar material to prevent evaporation. They should have plenty of space between them and be perfectly secured by a stout stake, to which the central shoot and leading side branches can be looped.

Upon the attention they receive at this stage depends in a large degree success in producing perfect specimens. Growth must be encouraged, and being in the open air it will be sure to be of firm texture. All bloom-buds should be removed until about six weeks before the specimens are wanted to be at their best. Turn the plants round once a week to prevent rooting into the soil and to maintain a good form. The pots will be full of hungry roots, which will demand much attention in watering and syringing, and should frequently receive clear, weak, liquid manure; that made from a solution of soot and cow manure mixed is the best.

Once cease to pluck off the bloom buds, and speedily the whole plant will bristle with them if all has gone well. To finally prepare for the show encourage the flowers to the utmost, and give the final training to the main branches.

About a fortnight before the show, remove to a cool, shady, well ventilated house, there to expand their flowers. And at the end of that time they should be loaded with large, highly colored blossoms and handsome foliage, and be from 5 feet to 6 feet in height, with a diameter in proportion. The blooming period can with care be prolonged far into the autumn.

Looking to the Second Year.—When that is over they may be placed in any cool greenhouse and be kept rather dry at the roots during the winter; cut them back in early spring, shake out of the old soil, and repot and grow precisely as in the first year; only in this case they will bear larger pots, will flower earlier, and the plants be much larger than in the first season.

Healthy specimens will make satisfactory exhibition plants for several years. A stock of young ones should, however, be coming on to take the place of any of the older ones showing signs of a want of vigor.

The Umbrella Pine, Sciadopitys Verticillata.

This remarkably distinct and handsome Japanese evergreen is already working its way into popular estimation, proving as it does perfectly hardy where many other fine conifers fail. As far north as Boston it is pronounced absolutely hardy, fine specimens being seen at the Cambridge botanic gardens, and in Prof. C. S. Sargent's grounds of that vicinity.

The Umbrella Pine is of slow growth at first but in time makes a large tree. It is claimed in Japan that they reach the age of 800 years. Even in that land of strange growths and forms it is regarded as a rare tree, being planted in the grounds of many of the temples.

In habit this tree is decidedly upright as to trunk, but with horizontal branches, which bear the whorls of singular looking, shiny, very broad, flat, needles lined with white on the under side. These needles, as may be seen by the accompanying engraving (which we are permitted to insert here by the kindness of the Meehan Nurseries, Germantown, Pa.), are of great size, and being arranged in umbrella-like tufts give the tree that unique and elegant appearance which renders it so desirable.

We learn from Mr. Meehan that at their nurseries they have a plant five feet high, of which not a leaf has ever been injured in the winter, and it is the admiration of all.

Suggestions Concerning Imperfect Fertilization of the Grape.

D. S. Marvin, before the American Pomological Society at Boston.

Changes by Nature and Cultivation. Grape-vines, like other plants, have from many causes been subjected to changes of natural development. These natural causes have recently been much modified by cultivation. One of the marked natural changes has been toward a separation of the sexual functions. We see this exemplified in the sexual organs, for no one of our fifteen or twenty species is now perfectly bisexual throughout. The Delaware is, perhaps, as perfect in its bisexual organs as any variety.

UMBRELLA PINE, SCIADOPITYS VERTICILLATA.

Vineyardists have suffered from this tendency to a differentiation of the sexual functions, but originators of new seedlings more. Our vines have all been selected with reference to their dual sexual organs and functions; but, notwithstanding all efforts for many generations, seedlings still assert a tendency to a final separation of the sexual functions.

Two crops a year—one of pollen in the spring, another of fruit in the fall, each of them containing large amounts of nitrogen and other costly germ elements—exhaust the vital energies of the vine and invite the attacks of sporadic diseases. Whatever former conditions may have prevailed, nature seems to be curing those inherent

defects by specializing sexuality to avoid this exhaustion.

Separation of the Sexes. We cannot overcome this natural law of differentiation, then why work against it? My idea is to separate the sexes and aid in developing sexual differentiation by cultivating female instead of hermaphrodite plants, with here and there a male plant elevated upon trees or on poles and wires, so that the male plants may run above and fill the air with their pollen and fertilize the female plants below. There would result great economy and saving of vital energy that might be turned to the development of more fruit. As it is now the pollen is more or less impotent, failing to fertilize the ovules, and the emasculated clusters are many. I have already made some experiments upon these suggested lines and though not far enough to determine the question, they warrant continued experimentation.

In the absence of single-sexed vines we must utilize such as we possess; perhaps Creveling and Enmelan will answer for female plants as well as any. Delaware and Hartford, or possibly better ones among wild riparia vines, will perhaps be the best acceptable staminate plants. The latter is doubtless the oldest species as it certainly is the hardiest, for when hybridized with any other it shows its vigor and longevity by dominating the new structures. Its sexual organs are more differentiated or specialized than any other species, the pollen grains being larger, better developed and more prepotent.

Results. Being engaged in originating new seedling Grapes, I have already saved a number of separate-sexed vines, and have no doubt of our ability to easily separate plenty of male and female vines. I have not been able as yet to save an exclusively female vine, but I have male vines—the ones chiefly needed at present, True the ovules are still present, but the upper part or stigma is entirely aborted. These vines develop and scatter upon the air a largely increased amount of prepotent pollen.

There will have to be some nice adjustment in blossoming time to accommodate the different species and varieties. Riparia vines blossom too early for most other species; their hybrids will have to be chosen for later kinds. I think that I can already accommodate the early and the medium varieties; those later in blossoming will need other male vines.

The economies subserved will be putting our practices into a fuller accord with the tendencies of natural development, wherein the functions of fertilization, ovule development and fruit production will all be carried on by the plant in a more natural manner, accommodating sexual tendencies in the direction of a higher order of plants.

Plants to Provide Pollen Only. The production of pollen as alluded to exhausts the plants' energies at the commencement of the season, while if this were performed by separate plants all the energies would be utilized for a fuller crop of fruit, while the fruitless male vines would have the whole season to recruit for the next crop of pollen. Many viticulturists have studied the causes of failure, and various remedies have been suggested, but no one heretofore seems to have attributed the difficulties to their probable true cause, that of virtually double-cropping the vines, a violation of the laws of natural development. The tendency to a separation of sexual functions is so general in all organic structures, animal and vegetable, that we ought to test its applicability to the vine by selecting and cultivating single instead of double sexed varieties, not acting as if we knew more about her laws than Nature herself, or seeming to accuse her of doing vain and idle work. Why are separate-sexed vines developed if we are to discard and throw them away?

A Comparison. Let us compare *Vitis riparia* and *vinifera* in their reproductive organs and functions, their health and vitality. Upon the discovery of America the former was found from Ottawa in Canada to San Antonio in Texas, the verge of the frigid to the border of the torrid zone. The latter was found in the Carolinas, and there only as a hybrid with labrusca. In sexuality riparia is the most specialized species we know of, while vinifera is perhaps the least; one had vigor enough to spread itself over the major portions of the Atlantic seaboard, the other still remaining about its centre of introduction. How will we be able to account for this difference, unless upon the theory of the superiority of single over double sexed vines? True, vinifera was probably a later introduction, but no one knows this to be the case. What is it that has weakened its vital energies so that it seems to be a failing plant all over Europe and the Atlantic seaboard, if we are not to attribute its low vitality to a constant selection of double-sexed plants?

The Subject Taken Up Elsewhere. Since writing the above I observe that the horticulturist of the Agricultural College of Iowa has been studying this question. He finds that the pollen grains of the male flowers of the wild *Vitis riparia* are about one-fourth larger than the hermaphrodite flowers, and that much of the pollen from the latter is flaccid and will not swell in water, as the pollen from male flowers does. This is because it is impotent. These important studies go to confirm my own views. I do not assert that differentiation of the sexual functions will cure all the ills of the vine, but that a return to Nature's methods may restore lost vital energies. Certainly there will be no harm in testing the question by actual experiments in the vineyard. Feeling the task too great for my own unaided efforts, I have come here to lay this question before you and ask you to kindly aid in determining the matter.

The subject has its practical side, even though it may not result in restoring the failing health of the vine. For every one has observed the poverty of the pollen of many of our cultivated varieties, their failure to set a crop of fruit, and the increase of the crop whenever the stigmas have happened to become fertilized with more prepotent pollen from adjoining vines. I am satisfied that there is no exception in the case of the vine to the great law developed by Mr. Darwin, that plants do really abhor self-fertilization, and that sufficient male vines, elevated above the ordinary vineyard, would prove a paying investment.

Various Topics Considered.

BY JOHN M. STAHL, QUINCY, ILL.

I notice that in your list of Strawberries for the South you do not mention Neuman's Prolific. This is the standard berry among the Charleston growers, who have doubtless tested the principal varieties; and it is popular as far south as Florida. It is very prolific, but the berry is not large; firm, subacid. Another good southern variety is the Federal Point, or Little Giant; large berry, better flavor than Neuman, good shipper, prolific.

A friend of mine, lately returned from a three years' stay in the fruit regions of California, says that many Oranges grown outside of the Riverside Colony are labeled "Riverside Oranges." How is this? Do the Riverside folks wink at this deception, or can't they help themselves? By the way, while we are all grumbling at our department of agriculture, we should remember that it introduced the Riverside Navel Orange. This Orange was brought from Bahia, and is known as the Navel, Umbilical, or Bahia in Florida. There is another variety of the Navel, brought into California from Australia, but it is not good.

We must confess that there is a vast amount of horticultural ignorance in this country. In the North we think we know all about Raspberries, Strawberries, etc., but how many of us know anything about the different varieties of Oranges? The talks and talks about educating the people to buy well-flavored Apples and Grapes, and yet we buy Oranges without knowing that there is any difference between the flavor of the Magnum Bonum and of Beach's No. 3. Two years ago I was in New Orleans and met a neighbor, an extensive small fruit grower. He had just arrived and of course was enthusiastic about the Oranges; so enthusiastic that he asked permission to pick an Orange from a tree growing in a door-yard. He wanted to tell his Northern friends that he had "picked an Orange off the tree and eaten it." Permission was readily granted, and my friend took one bite of the Orange. We all had a hearty laugh; and I am certain that when my friend is reminded of that Orange by this paragraph he will make a very wry face.

Bagging Grapes improves their flavor. I sent some bagged Concords to a friend and he would scarcely believe that they were Concords. Also, when bagged the bunches ripen more evenly—there are scarcely any unripe members of a bunch. Mosquito netting would not do so well as paper.

The correspondent who inquires in your September number about transplanting Walnut trees will find it difficult to transplant them three years from the seed. The Walnut has a tap root, hence it is best to plant the seed where the tree is desired to stand. I have transplanted Walnuts one year from the seed and lost very few. I would transplant in the early spring, and *not* prune the roots. But in the case of trees three years from the seed, I would prune the top. I have a considerable grove of Walnuts, the seeds planted where the trees were to stand, without a place vacant. I plant two nuts in each place; so that if one fails to start I will yet have a tree.

In reply to query 399, it is said that the Robin is the only bird that injures the Grape crop. Should the Baltimore Oriole not be added? I am certain that it should. In this section there are not many Orioles, but they do much damage, because they do little more than sample the grapes.

This damage done by the Orioles was brought out prominently by investigations of the work of bees in the vineyard. A local paper asserted that bees punctured Grapes. A correspondent asserted the contrary. This led to a lively correspondence, and it was finally decided that all should carefully watch the bees in the vineyards, and hang bunches of perfect berries near or at the entrance of beehives. The result of three weeks of investigation was to exonerate the bees.

It is asserted that here in Illinois, where there has been such a wholesale destruction of Apple orchards, that orchards composed of trees grafted on Dwarf Paradise stock show very few vacancies and are doing well. I cannot say how true this is; but the assertion is made by responsible closely observing men. I wish to say that the newspaper correspondents who speak of this should be careful to prefix the *dwarf*. It is often omitted, and I know that some people think the Standard Paradise Apples—Summer Sweet Paradise and Winter Sweet Paradise—are meant. The Dwarf Paradise bears a fruit so scrubby and poor, and is generally so worthless except for stocks, that I am inclined to think it is hardy enough to pull through itself and anything grafted on it.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. NOVEMBER, 1887. No. 2.

In the Autumn Woods.

The busy woodpeckers tattoo the trees,—
Quail whir and whistle, and wild doves call,—
In the grasp of squirrels the ripe nuts fall!
On the loftiest boughs the jays are shrill,
But silvery soft is the thrush's trill!
As his perfect music outpours to-day,
He forgets that summer has slipped away!
—*W. H. Haynes.*

PANSY PLANTS are hardy, but they suffer from alternate freezing and thawing of the soil in which they are growing. To prevent this cover the surface with a light coat of leaves or straw after the first hard freeze.

ANTHRACITE COAL ashes should be saved for the land instead of going to the dumping ground. We are satisfied that they are of benefit to any kind of soil, but especially to such as is heavy. A small proportion, say one-tenth, of coal ashes in potting or hot-bed mold we have found a good ingredient.

THE FACT THAT HYACINTHS and bulbs of a similar class reach such high perfection in Holland, a land constantly swept by moist sea breezes, and well watered, should teach us that free moisture in the atmosphere, and in the soil (with drainage), are prime factors to the best cultivation of these favorites.

AN ESTIMATE concerning the Cranberry crop of the country arrived at at the recent convention of American Cranberry Growers at Philadelphia makes the entire crop this year 569,000 bushels. Last year it was 687,000 bushels. The crop of 1885 was very large in Wisconsin and small in New Jersey. In Nova Scotia the product is increasing.

SECRETARY WOODWARD of the New York State Agricultural Society has in view holding twenty farmers' institutes the coming winter. Last season only a few institutes were held, because there was not money to pay necessary expenses, but such as were held were very successful. An appropriation was voted by the legislature last winter, and now the society can proceed without check. The secretary is now issuing circulars requesting farmers in various localities to fix times and places for the meetings.

THE ONION CROP is said to be short all over the country. In Massachusetts the yield is small. The Connecticut crop is slight; the average yield on 800 acres is 100 barrels an acre, much below last spring, and inferior in size and keeping quality. The Onion-growing towns of New York generally report a small crop, and in Orange county the shortage is serious; the 2,500 acres of Onions will produce some 350,000 bushels in all, against nearly 600,000 in 1885, which are now selling at $2 per sack of 100 pounds. The New Jersey crop is also short. The same story comes from all the West.

ONE of the marked advantages accruing to the fruit grower, as well as consumer, by the improved methods of transporting fresh fruit in these days is the equalization of the crop between districts where fruit has failed and where it has not. Samuel Miller, in the Rural World, says, for instance: "Notwithstanding the failure of the Grape crop in this vicinity, Grapes were never so abundant and cheap as they are this year. Ohio and New York are shipping here quite freely by the car load, and as freight charges in this way are but a mere trifle, the growers can market their crops almost as cheaply in this and other western markets as in the home or local markets.

THE APPLE CROP of Western New York fruit section is exceeding expectations. A report from Lockport puts it that, with what fruit is being brought in from adjoining counties, conservative buyers think that Niagara County will turn out 500,000 barrels. As for cider making, the largest mill in this part of the State has already used 200,000 bushels, and tons of Apples are being received in the store-houses daily. Good red fruit brings $2 a barrel; cider Apples 20 cents per cwt. In this connection it may be stated that an experiment has been made in Lockport of burning apple-pomace as a fuel with brilliant success. This was done by several large manufacturers with the refuse of the large mill referred to. Pomace being a wood or fibre pulp, when thrown on a coal fire it quickly becomes inflammable and makes a hot fire.

UNDOUBTEDLY the most popular and deserving hardy climber of the day is the Japanese Ivy, *Ampelopsis Veitchii*, also called the Boston Ivy, because the people of Boston were foremost to duly appreciate its worth. It grows and propagates with as much ease as the ordinary Virginia Creeper, save in this respect: that young vines the first winter, and before the roots have reached well down, are a little tender, and will bear a slight covering over the roots. But we have never seen a vine after its first successful winter injured in the least. It grows with a firm hold on stone, unpainted wood or bark, and its leaves are so dense as to overlap almost like shingles. The foliage is a fine green during the growing season, changing to the richest autumn tints later on. It is so easily propagated from cuttings that no nurseryman should charge above twenty-five or fifty cents per root.

IN VIEW of the frequent references to the Japanese Plums and Persimmons in the rural press it cannot be amiss to caution our readers everywhere, except those of the South, to leave them severely alone as outdoor fruit trees. To our knowledge these trees are being offered by salesmen throughout the North at $1.00 and upwards each. Whoever buys on the claims of some salesmen will have only chagrin and the loss of money and trouble as a return. It is indeed questionable whether any genuine stock is at the disposal of the tree agents offering it, but that is a point of slight consequence to many of these men, and orders are constantly being solicited. It seems likely from all accounts that in the Gulf States both of these fruits will prove valuable, and they are known to succeed in California. Here in this latitude they can be recommended only for a single purpose: they make nice ornaments when grown in a tub, put in the cellar over winter and set out in the spring.

What an Amateur has Observed.

That many people plant their gardens too thickly; the rows of vegetables should be wider apart and the plants thinned out in the rows, and the ground between the rows should be kept clean of all weeds.

That Celery grows very rapidly after you begin to bank it up.

That some people let Pears ripen on the tree. They should be picked before they are mellow; when the Pears will come off easily without breaking the stem, then is the proper time to pick them.

That a garden can be kept looking nicely late in the season if the leaves are raked up; clean up where the early vegetables have been; cut off all old dried flowers, tie and stake up plants that need it; in a word, tidy it all up and keep it so.

That an old fence or shed may be made beautiful if covered with Virginia Creeper.

That weeds between the bricks in a pavement may be killed by pouring boiling water on them; salt added to the water is more effective; if one application does not kill them try another; it's a much easier way than to dig them out with a knife.

That Squash do not set near the roots of the vine, but away out on the vines; if the end of the vines are nipped out when they are about a yard or so long there will be no Squash to pick in the autumn.

That the White Japan Cucumber is superior to the green varieties for slicing and eating raw; it is as easily raised and is as productive as the green varieties. Try it.

That sprinkling Currant and Gooseberry bushes with white hellebore (a tablespoonful stirred in a gallon of water, and put on with a watering-pot) whenever the Currant-worm makes its appearance(two or three times during the season) will rid the bushes of them.

That the love of flowers and the cultivation of them is on the increase among the people. May the good work continue.

That women are interesting themselves more in gardening, and even doing considerable farming.

That Tomatoes are much better if the vines are trained upon a trellis, than if left to ripen on the ground.

That Lima Beans do well on both light and heavy soils. I have raised Dreer's Lima on the sand (not sandy loam) enriched with well rotted manure, and I have raised the King of the Garden Lima on a clayey loam with the same success. E. W. L.

Transplanting Evergreen Trees.

N. ROBERTSON, SUPT. GOVERNMENT GROUNDS, OTTAWA, CANADA.

Considerable advice has been given as to the best time to transplant Evergreens, some advocating one time, some another. I have tried all seasons, but am as yet at a stand-still as to which is the best. I would certainly favor September, provided conditions were favorable, a moist time and a clouded sky, which generally go together. There are several things that require great care to be successful.

In taking up trees the greatest care should be observed not to destroy the fibers by pulling and stripping them through the ground; they are very tender and easily destroyed. Some Evergreens cannot be moved with a ball of earth, owing to the nature of the roots and of the soil in which they grow, and when once taken from the soil no care can be too great to protect them from exposure, even to air, until planted. The roots should at once be wrapped or covered up in some moist substance.

In planting be sure your soil is free from all impurities, for above all things, Evergreens like a clean soil and as near the nature of that from which they are taken as possible, and even if this has to be substituted. But let it not be forgotten that moisture is a principle element in successful Evergreen planting. Select a moist time for it if you can. Spring planting I have always found with its drawbacks; you are at once upon dry hot weather, with newly packed soil around the roots, and which is quite liable to dry sooner than when it settles from fall.

Winter mulching should not be neglected with pea straw or sawdust until the trees

show signs of having taken to their position. Staking them firmly until the roots have taken a good hold is also important. If in a hedge row, pins can be driven into the ground at the height required on each side and a piece run along the top of them so as to keep them steady and prevent the snow from crushing them down in winter.

For large specimens I have adopted a plan that I may say never fails. I dig a trench as far from the tree as is possible to lift and allow them to stand there until the ball is frozen, so that it will lift entire. If the soil is not proper where I am going to put them, I have the holes dug and whatever fresh soil I think I may require put into it, for filling in when planting. In this way it does not require much, as the ball will fill up mostly, unless you make the hole very large. I put the soil into the holes and cover with warm manure to keep out the frost, selecting a mild day in which to remove them, that the soil may be more easily worked.

In moist climates there does not exist the same trouble we have in moving Evergreen trees, a fact which shows plainly that the dry atmosphere has much to do with difficulty in transplanting these trees.

Two Interesting Maples.

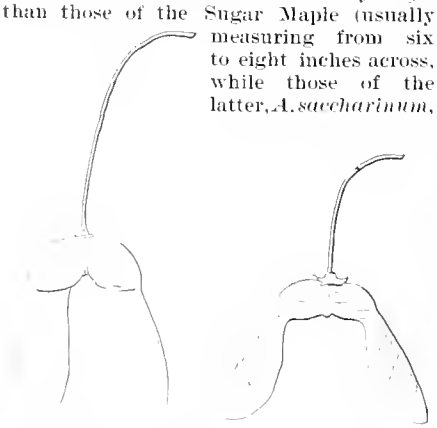
L. H. BAILEY, AGRICULTURAL COLLEGE, MICHIGAN.

Two important maples, the ordinary Sugar Maple, *Acer saccharinum*, and its so-called variety, *nigrum*, appear to be very generally confounded. In Central Michigan these two maples are about equally abundant. Having observed carefully hundreds of trees as they occur along roadsides, in fields and woods, I cannot escape the feeling that these maples are entirely distinct species. They appear to me to be as distinct from each other as the Sugar and Red Maples. No one since the time of Michaux has endeavored to separate them, so far as I know, and even Michaux does not mention certain very marked distinctions, nor does his figure show them. I shall give a brief contrast of the two trees.

The leaves of the two are very dissimilar. Those of the Black Maple, as I shall call the *Acer nigrum* of Michaux, are usually larger than those of the Sugar Maple (usually measuring from six to eight inches across, while those of the latter, *A. saccharinum*, span from four to five), very much thicker and duller green, the lobes fewer, and the sinuses or angles between the lobes much broader and shallower. The lobes are three, with one or two broad but comparatively inconspicuous nearly blunt projections on each side. The sinus or split at the base of the leaf is usually closed, the edges lapping and covering the insertion of the petiole or leaf-stalk, causing the leaf to appear as if slightly peltate. The leaves of the ordinary Sugar Maple are much more lobed, and the lobes terminate in long projections. The leaves of the Black Maple are pubescent or downy beneath and on the petioles, so much so that they feel soft or velvety when passed between the fingers. The books ordinarily describe the leaves of the Black as paler beneath than those of the Sugar proper. This, however, is a mistake. The statement should rather be reversed.

LEAVES OF THE BLACK MAPLE.

LEAVES OF THE SUGAR MAPLE.



Fruit of the Sugar Maple. *Fruit of the Black Maple.*

The most singular character of the leaves of the Black Maple, however, and one of which I can find no record, is the limp or drooping position of their sides. This is especially conspicuous when the leaves are fully grown. The leaf hangs upon the petiole like a piece of some limp thick cloth. This feature, as well as the characteristic lobing, is shown in the cut. The leaves of the Sugar Maple stand out straight upon the petiole, in striking contrast to those of the other species. In fact, so great is the difference in the manner of holding their leaves that I can distinguish the two trees at a glance at a distance of several rods.

The leaves of the Black Maple, sometimes at least, bear stipules. This peculiarity is recorded in the American Naturalist for December, 1872, and July, 1873, but it was not supposed that the stipules are a constant character of the plant. I am inclined to believe, however, that they always occur in this species, although I still need the observation of one or two seasons more to determine this point. Mr. C. F. Wheeler, a most reliable observer, states in his catalogue of Michigan plants that the Black Maple is distinguished from the Sugar Maple by "its prominent stipules and downy leaves."

The fruit of the two maples is commonly much unlike. The differences are shown in the cuts, that of the Black being much smaller, with more divergent lobes, than that of the Sugar Maple. This great difference is not constant, however, yet I think that I can always distinguish the fruits when in considerable quantity.

In growth the two are not alike. Young trees of *Acer saccharinum*, when growing in the open field, usually bear their branches more horizontally than do those of the other.

For ornamental uses the planter should distinguish these two species. The Black Maple, with its heavy cloth-like leaves, gives a much denser shade than the other, and has a softer and more tranquil aspect. I am not aware that one is superior to the other for economic purposes, although Michaux states that the wood of *Acer nigrum* is preferred for certain industries. Both yield sugar.

I cannot leave this subject without endeavoring to impress upon all who love the farm or rural life in any direction the importance of making comparative studies of trees, especially of the native species. By study I mean a close observation as one goes about his work. The good observer never goes to town or through the fields without drawing pleasure and inspiration from the trees, no matter how busy he may be or in how much of a hurry. One soon comes to recognize the trees as intimate acquaintances, and a hasty glance at this species or that, as one passes, is equivalent to a salutation for a friend. If the kinds of trees are so many as to perplex you, single out a few species for especial study during the season. Two very distinct species may appear very much alike to you at first, but the differences will soon begin to unfold themselves and presently you will wonder that you could ever have confounded them. Even if you are familiar with all the species in your flora, you will find it pleasant to single out a few for especial study. This is the practice of the writer, and one of his studies this summer has been a comparison of the two maples contrasted above. Even the best known of our trees are not known enough. The more one studies them the more he finds to admire. The more he admires them the happier he certainly will be.

Refrigerator Fruit Houses in Pennsylvania.

JUDGE G. D. STITZEL, CHAIRMAN OF COMMITTEE ON FRUIT HOUSES OF PENNSYLVANIA HORTICULTURAL SOCIETY.

There is no longer any doubt as to the success of Refrigerator Houses, if properly constructed or managed. There are several in operation in the city of Reading, and they are proving profitable both to the owners and users.

At our last annual meeting a committee was appointed to visit some of the Reading fruit houses, and submit a report of their observations. I have also visited several during the interim, and have found a great difference in style and methods of construction. Have noticed, however, that small houses are not generally a success. I have examined them costing from $300 to $10,000, and have drawings of two; one costing $1,000, the other about $7,000, the latter being one of the most complete I have ever seen, and having a capacity of 3,000 barrels. Both of these houses keep fruit very nicely.

In the construction of fruit houses an important point is to build sufficiently strong. Some have overlooked this, and have since been obliged to put in additional supports.

Of the two houses referred to, the large drawing annexed represents the house costing $7,000, and having a storage capacity of 3,000 barrels. This was built by Dr. J. W. Funk, of Boyertown, Pa. In this building the outside dimensions are 40 by 55 feet, the outer wall being two feet thick and laid in cement. Next to this is an air space of 7 inches, and inside of this a charcoal lining of 4 inches. The storage room is divided into three apartments, which are entered

from a vestibule, through which entrance is made from outside. These doors are always kept carefully closed, so as to prevent a change of air. Height of lower story, 8 feet; height of building 15 feet; 20 feet square, which allows for a body of ice 12 feet thick, about 600 tons.

There are no windows in this building except in front. The ceiling or floor upon which the ice rests overhead is simply laid with joists about 10 inches apart, permitting the cold air to descend easily. Spouting is arranged between the joists to carry off all dripping from the melting ice. There is no ventilation of the storage room except through the entrance doors. The ice chambers have two large ventilators in the roof.

This building has been in operation one year, and has proven satisfactory. The owner has excellent facilities for storing his ice cheaply, having a dam adjoining the building, and an engine capable of elevating a ton of ice per minute. I think a house like this could be built for less than $7,000.

The smaller building to which I have referred is 30 feet square; lower story, single brick wall 13 inches thick, 9 feet high; upper story frame; ice chamber 16 feet high, with a capacity of 300 tons; storage capacity, 900 barrels. The original cost of this structure was about $1,000, but repairs and additional supports cost from $1,000 to $1,200 more. The ice is usually covered with cornfodder or some similar substance, for protection. This house is used chiefly for storing butter and eggs.

Of course many additional details could be given concerning these buildings, but my object has been merely to give a general idea of how they are constructed, and what measure of success has attended their use.

Newer Varieties of Fruits; Estimates of Value by Leading Pomologists.

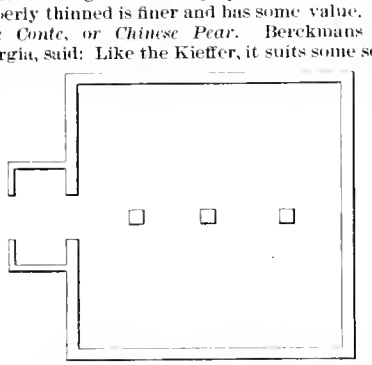
REPORT ON DISCUSSION BEFORE AMERICAN POMOLOGICAL SOCIETY, BOSTON, SEPTEMBER 15.

(Continued from October Issue.)

Pears. *Comet.* Lyon, Michigan, reported it very poor in Rochester, Minnesota, two years ago, although handsome.

Kieffer. Brown of Rhode Island: Not worth growing. Engle, Pennsylvania: Fine for everything but eating. Fuller, New Jersey: Received the variety from Downing and this is very fine fruit, for canning not to be despised. Berckmans, Georgia: May not be suited to some sections, but to the South especially it is a boon. It is not of the best quality, but for health and productiveness none are better. It proves to be most valuable for market. Van Deman said he has seen it from North to South; at the North it is very poor, at the South very fair. Augur, Connecticut, spoke of its great bearing qualities; the fruit properly thinned is finer and has some value.

Le Conte, or Chinese Pear. Berckmans of Georgia, said: Like the Kieffer, it suits some sections better than others. With them as taken from the tree it is not good, but if carefully matured through early picking will almost compare with the Bartlett. It is distinct from the Kieffer. Crowe, of Connecticut, said it grows as well with them as in Georgia. Quality and size better than Kieffer; it rots at the core. Cary, of Georgia. The growth simply runs up; as a general thing it should be kept well cut back, as it would soon grow too high.



Ground Plan of the Smaller Fruit House Described Above.

Russian Pears. Hatch, of Wisconsin: They don't stand well in the nursery.

Besseneanka. Gibbs, of Quebec, said the name indicates "seedless." It is the best of the Russian Pears; foliage perfect, hardiness complete, in form like the Bergamot; the flesh is not buttery, nor very fine. Watrous, of Iowa, has tried about 30 of the Russians, and this is the only promising one.

Sapieganka. Gibbs, of Quebec: Some better than Besseneanka, but not so hardy. Only thing that can be done with this race is to fruit them and find out which are of use. Whether we have the Bergamot of Volga, Russia, is very doubtful. Brackett: The Sapieganka cannot be relied on at the West as hardy, especially where the subsoil is clay. Watrous, of Iowa, reported failure with it. Hoskins, of Vermont, said it stands with him, in Northern Vermont, where all other American and European varieties are killed; is as hardy as the Wealthy Apple.

Hoosac. A delegate reported this as being a very nice Pear, and very promising. Lovett, of New Jersey, says it is very fine, coming in contact with Bartlett somewhat.

Wilder. Green, of New York, said it was handsome, early, with bright red cheek; not inclined to rot at core.

Dronard. This was said by a delegate to succeed well about Richmond, Virginia.

Md. Von Seibold. President Berckmans pronounced it not much better than the Sand Pear. Lovett, of New Jersey, thought it almost identical with Mikado.

Mikado. Discussion brought out the fact that much confusion prevailed concerning this variety and the Daimio, it being evident that what some had under the one name was identical with what others had under the other and *vice versa*. The fruit is in either case large, but of inferior quality for the dessert.

Cherries. *Russian.* Watrous, of Iowa, had tried 25 to 30 sorts, but found them generally not as hardy as the Richmond class. Some that were iron-clad as to tree he had not yet fruited.

Windsor. Barry, of New York, said this is a good one, of solid flesh and worthy of culture.

Dye-house. Fuller, of New Jersey, spoke of it as a nice, little early Cherry, but not deserving of general culture.

Leed was pronounced "no good."

Montmorency. Berckmans: It's one of the few that succeed in the middle region of the South.

Wragg. Watrous, of Iowa, pronounced it so nearly identical with the English Morello that some claim it is the same. Others think it is a seedling of that sort. Appears hardy as to fruit.

Louise Phillipe. Taylor, of Rochester, N. Y., spoke of this one as a fine sour Cherry. Barry, of same place, thinks it a fine Cherry.

Plums. *Kelsey's Japan.* Berckmans, of Georgia, does not believe it to be of any value north of New York, and probably not in New Jersey. In Southern States very promising, large, productive, somewhat willowy in growth. The most promising introduction of many years for their section. Lovett, of New Jersey: Young trees are tender; grafted up are less hardy than the Peach, had grafted it on American Plum. Van Deman, of Department of Agriculture, had in Northern Texas seen it killed to the ground, and injured at Dallas, Texas; thinks it will not succeed where Figs will not.

Simoni. Watrous, of Iowa, said it was not hardy with them: Barry, of Rochester, stated that they grew it first as an ornamental tree; fruit is badly stung by Curculio; places no special value on it.

Marianna. Watrous, of Iowa: If not top grafted on Miner, would freeze to the ground.

Robinson was said to be later than the Wild Goose.

Bassett's. A delegate said it was about as large as a Cherry.

Blackman. Berckmans, of Georgia, has had it ten years and never saw fruit. Pomologist Van Deman said it has never yet either blossomed or fruited in any nursery he knew of; every honest nurseryman should burn every tree he has.

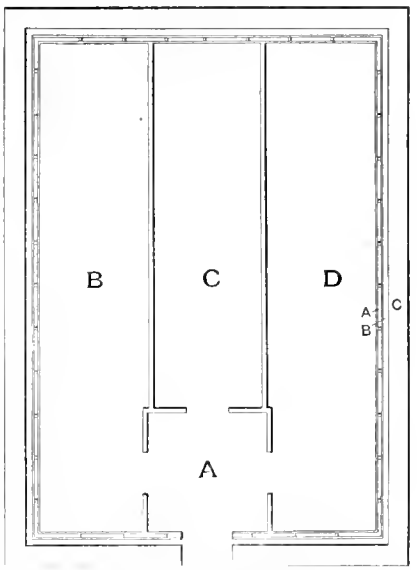
Moore's Arctic. Hoskins, of Vermont, thinks it a seedling of Lombard, which it resembles. It's the only variety they can rely on in Northern Vermont; is Curculio proof. A Nova Scotia delegate said they had not found it Curculio proof. About the only Plum that can be raised in New Brunswick, and that by laying down.

De Soto. Brackett: Placed at the head of list of Western Native Plums. Harrison, of Ohio: Freest to bear of any. Engle, of Pennsylvania and Lovett, of New Jersey: One of the best.

Peaches. *Peen-to or Flat Peach.* Fuller, of New Jersey, said this had been introduced more than fifty years ago, and re-introduced by Berckmans of Georgia in late years. Of great value to the South, and especially in Florida; most an admirable shipper. Great variation in forms, some being long and very sweet. Van Deman spoke of it as being worthless outside of the Orange belt.

Bidwell's Early. A long form of the last named and worthless outside of the Orange districts, not succeeding even in Georgia.

Stevenson's Rareripe. A delegate said this was largely grown in New Jersey, but was no new Peach. Ripens after Crawford's late.



Ground Plan of a Pennsylvania Refrigerator Fruit House.

Albright. Said to be a White Cling, originated in North Carolina.

Grapes. *Moore's Early.* Thurlow, of Massachusetts, had found it fruitful, about equal to Concord. Bourne, of Rhode Island, spoke of its not coming up to Concord in that respect. Lyon, of Michigan, pronounced it as early as Hartford, and only desirable because early. Strong, of Massachusetts: Not as productive as Concord. Caywood, of New York: Large coarse, rather inferior, fair but not hardy cropper; from one to two weeks earlier than Concord; valuable for the North.

Worden. A Rochester, N. Y., delegate said it was liable to drop with them. Brackett, of Iowa: It's going to supplement Concord, an idea which several other delegates also expressed. Caywood thought it did not ship as well as Concord. Hubbard, of New York, reported on it favorably.

Empire State. Berckmans: It does well in Atlanta, Georgia. Cole, of Connecticut, had found it to mildew badly. Campbell, of Ohio: One of the healthiest he has ever grown; never any mildew, quality very fine. Has some foreign blood, he thinks. Regards it as the best among the Whites; flavor fine, approaching that of the best foreign kinds. Not as productive as Niagara, but as hardy. Caywood, of New York, said that with its giving large crops the fruit ran small. Thinks the skin unpleasant.

Ulster. Green, of New York, considers this a very valuable Grape. Never fails. Cole, of Connecticut, found it to mildew bad. Campbell regards it as valuable; not a vigorous grower, but great producer. Hubbard, of New York, reports it as free of mildew as any.

Berckmans. A Georgia delegate said that it was larger than Delaware, but of smaller cluster.

Woodruff (red.) Lyon, of Michigan: Far ahead of most others as a market Grape. Campbell, of Ohio, said it has a hardy vine; healthy foliage, large *labrusca*, mildew resisting; clusters and berries large. Some native odor, little in taste; most persons like it very much; red berries. Green, of New York, had found the bunches to be small, quality poor, but a productive, handsome red Grape. Brackett, of Iowa, pronounced it very promising, referring to its healthy leaves, large clusters and fine appearance.

Jewell. Van Deman described it as a black variety, extra early, small clusters, fair-sized berry. Campbell, of Ohio, said the vine was much like Early Victor, but the fruit is one week earlier; about with Moore's Early; small as Delaware in cluster, great deal better in quality than Hartford or any other early variety.

Early Victor. Campbell, of Ohio, describes it as being hardy and of same season as Hartford.

Notes From a Rochester Fruit Farm.

BY CHAS. A. GREEN.

THE APPLE WORM. In picking our Apples we find that the codling moth has done most damage in the lower branches, the higher branches and top being more free from blemish. Last year we sprayed the trees once with a solution of Paris green and water to kill the canker worm, a heaping spoonful of Paris green to a barrel of water. This appears to have destroyed many insects as the fruit was free from defects, but this year no Paris green was applied, and there are many wormy Apples. I shall be in favor of spraying every year hereafter, whether there are canker worms or not.

PRUNING APPLE ORCHARDS. We are now pruning our orchard planted 12 years ago. If we could have our choice we would prefer to prune next spring just before the leaves appear, but that is such a busy season it would hardly be possible to do the work then. I should not like to cut off large limbs at this season, as they will not heal over as smoothly or quickly as when cut in the spring, but with frequent pruning no large limbs need removing. It is only from neglect that such have to be removed.

The removal of such limbs is the cause of decay in many Apple trees. Avoid it as far as possible. With old trees, whose days of usefulness are about passed, it may do to risk removing large branches, for the fruit on those remaining will be larger and better, but the trees will not live so long from the cutting. Young trees should be visited with the pruning knife every year. Then it is easy to keep them in good shape. If there is too much top the tree over bears, the fruit is small and defective, and it is difficult to gather the fruit. Thin out the branches and remove the lower ones that are liable to be borne down with the weight of fruit and interfere with cultivation. Do not prune too much at one time. A neighbor nearly ruined a productive orchard by cutting too much at once. There is danger of this. The longer the trees have been neglected the more they must be cut it is thought, but better do part now and part next year, and in the future do not neglect to prune a little every year.

I find it difficult to keep the dwarf Angouleme Pear pruned to a proper shape. It grows too rampant here, reaching double the size of Anjou and others, and is not so fruitful on account of excessive growth; on less productive soil it might do better.

THE SUCCESSFUL MAN. An active, thorough going, farseeing business man will make things lively even in the most stagnant neighborhood. Let him undertake fruit culture and swarms of pickers gather at his door, and families move into that neighborhood to get work. As his success becomes known his neighbors follow his example, not only in planting fruit, but in diligence, thrift and enterprise and finally the entire town takes a jump towards better things. Eternal vigilence and goaheadiveness are the price of success as well as of liberty. When such men appear upon the scene, slow going people have to clear the track or hasten their steps. In no pursuit is an active man more in place than in fruit growing. He must be a man to plan and to persevere, to work and to wait, to act promptly and decisively in order to secure success. But what pleasures he must enjoy, in his favorite occupation, surrounded with vineyards, berry fields and fragrant orchards!

THE CURCULIO. Plums years ago were considered beyond the reach of our fruit growers on account of attacks of curculio. The fruit sold at fabulous prices. No one planted it extensively. I remember years ago when J. S. Woodward reported at our Western New York Horticultural Society that he had "put his foot in it," referring to the planting of a few acres of Plum trees. He expected to be laughed at but thought he would try Plum growing and see what would come of it. If was then discovered that in large orchards the curculios simply gave the plums a healthy thinning, for Plums naturally tend to over bear. Soon Plums were plenty in market, and now every one knows that they can be grown as readily as other fruits, yet for years it was supposed that the curculios had ruined the Plum industry. How easy it is to be discouraged at trifles.

EFFECT OF DRAINAGE ON FRUITS. I know of no fruits that will succeed on low, wet, undrained soil. When I moved on to our fruit farm I tested a few plants and trees of almost all hardy fruits on a low piece of undrained muck. All failed except the Strawberry, and that was often cut with late spring frosts. No water lay on the surface here, but the subsoil was wet. Had I planted largely here I would have lost all. Where I have been called upon to explain the cause of barren orchards I often find them located on low soil that has not been drained. I recently saw a field of Currants at Joseph Harris' farm, near Rochester, planted on lowish land, all tile drained, but on one part the drains had become clogged. On this clogged portion the Currant bushes had dropped their leaves, had made but a feeble growth, and had borne only a small crop, while near by, where the drains worked, the leaves remained on late, growth was vigorous, and the crop enormous. We put in tile drains every year, using round tile with flat bottoms—no horseshoe tile for us, as the weight of the earth presses them into the soil and finally the water ceases to run. I am placing tile in ditches long left open, finding it too expensive cleaning out open ditches every spring. Where there is much water in the ditch designed to be covered you can use No. 2 sewer pipe. These are pipes of any size desired that, bar unimportant defects, and are sold to fruit growers at half price. They can be used for constructing sluices across roads. If you have an open ditch that you desire to bridge put in a few lengths of these sewer pipe for the water to pass through, and make a road of earth over them. They should be large enough to carry off the water freshets.

MULCHING THE FALL PLANTINGS. Planting at this season is becoming more popular each year. There are many arguments in favor of this season for planting. But all who plant now need cautioning again and again about the necessity of guarding against heaving by frost. A little attention makes the planting at this season safe, a little neglect renders failure certain. I once planted a large field of Blackberry tips just before winter came on. Immediately after planting I drove over the field with a load of strawy horse manure and scattered a little litter over the spot where each plant was set—a large forkful would cover several plants, and a load would cover half an acre. This slight shading of the soil prevented frequent freezing and thawing, by keeping the soil frozen after the cold weather began, hence there was no heaving and all was successful, and the plants received an early start next spring. Had I neglected the mulch all would have failed. In the spring I would have found the plants out of the ground and dead. This covering must be given to fall planted Grape-vines, Strawberries, Currants, etc. Trees can be protected the same way, but I generally pile the earth one foot high about the base of each tree when planted in the fall. This is usually protection enough. If a handful of strawy manure is thrown on the sunny side of the mound it will help. It is almost impossible to keep Strawberries in the ground planted late in October, unless the land is remarkably well drained, or entirely covered with straw, therefore I do not recommend fall planting of these. Neither do I recommend planting Peach trees in the fall at the North. Other trees and plants do well at this season if properly cared for.

Notes from an Oneida County (N. Y.) Vineyard.

That intelligent horticulturist, E. P. Powell, of the county named in the heading, has recently given the following interesting notes, dated Sept. 5, on the doings of his vineyard, and which we reproduce from the New York Independent.

It is impossible to judge a Grape by what it does in a single season. For instance, last year I hardly got a Pocklington that was fit to eat, although the season was late. This year I am eating splendid Pocklingtons September 5th. Last year they were intolerably musky, this year but slightly so. My notes so far for 1887 read:

Lady ripe August 18th; not ripe in 1886 until August 25th. When thoroughly ripened stands in quality close to Brighton, a fair shipper; It has several new points this year and will be one of the few I shall grow more extensively.

Picked Lindley August 29th, Massasoit August 30th; not ripe last year until September 10th; both fine shippers. They are a good deal alike, Lindley much better when ripening, but Massasoit gains quality as it hangs on the vines. They are neither of them as good bearers of fine clusters as they ought to be. Massasoit is the only grape in my vineyard that has ever rotted. I wish we knew, or some one knew, all about that vile disease. I intend to dig my vines and burn them. The evil may be in the air, but I think the vine is also at fault. At least out they go.

Began picking Wordens August 29th, finished September 5th; last year this grape was ripe from September 1st to 15th. Worden cannot be easily distingnished from Concord in color of fruit, but the stem is more brittle and is less inclined to red. But as a grape Worden is fifty points ahead out of a hundred. It is fine eating when only lightly colored, while the Concord is not eatable till ten days after coloring. There is a full two weeks difference in time between sweet Wordens and sweet Concords.

Duchess, picking September 5th; will be a little better, nearly perfect, in about three days more. Duchess I mark exceedingly high; the bunches are very fine, very showy, and the flavor is excellent; it is also an admirable shipping grape, and will bear a good deal of rough handling. The handsomest show of all white grapes is made by Duchess.

Martha. Picked some good, sweet fruit August 30th; picked the balance September 3d. This variety is only a fairly good shipper.

Pocklingtons are ripening finely September 5th; should hang on five days longer. But Pocklington is never quite ripe—that is, while good, it is never quite free from a taste of imperfection, as if not entirely ripe. It is a capital shipper.

Wilder is fair to-day, September 5th. Last year not good until the 20th.

Brighton is superb, as usual, and will in two days be as fine as a perfectly ripened Iona, which variety I think it closely follows after. For very highest table qualities Brighton must stand first of its class, and is not a bad shipper. While it has not given me heavy crops the vines are not old and I understand it is a prolific sort.

Ionas are very nearly ripe where open to the sun; but take care about exposing this grape too much. It needs full foliage. It has no superior in the world.

Walter has been eatable since September 1st, but is a curious grape, that will two weeks hence not seem quite ripe.

Roger's No. 30 will need about five days more. For a meaty grape it stands first with me; it is a grand grape and cannot be overpraised.

Herbert I picked this year August 29th, which is several days ahead of 1886. My notes make points favorable to Herbert, only that it is so far with me a light bearer.

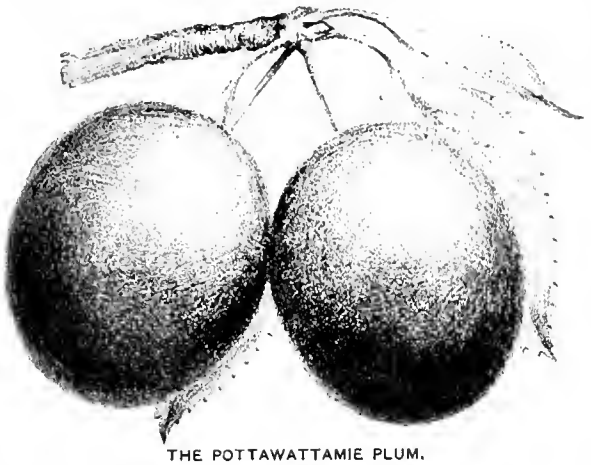
Empire State not yet ripe September 5th.

Concord can be eaten if the eater be not over particular, but it is far from being truly ripe. There is no reason for any longer planting this variety; it is thoroughly and every way superceded by Worden, in grape and in vine, in time of ripening and in quality, while for prolific

bearing the two grapes do not differ. The Concord class, including Worden, have tender skins and are poor keepers.

Agawam is another grape that surprises me this year by early ripening, being nearly ready at the present time.

Prentiss this year has not proved very refractory in any way, except that it does not give large crops, and needs too much covering and nursing; it should be discarded.



THE POTTAWATTAMIE PLUM.

Barry is much like Wilder, but is not so good; it should be discarded.

Moore's Early I mark down and do not see any good reason for planting it; it barely precedes Worden and bares light crops.

Niagara is really grand, but leaves an unpleasant taste in the mouth.

Hayes I have not yet fruited, but believe it to be one of the best for early market, and if I had not already planted it largely should do so.

Herbert is an excellent shipping grape, compared with most of the black grapes of similar size. Its skin is rather too tough for eating, yet I find it a favorite with almost all my visitors.

Jefferson is one of the very best in quality, but I have fruited only a small bunch or two, and cannot tell its shipping quality.

Of my newer sorts, not fairly tested, I think best of Golden Gem, Poughkeepsie Red, Hayes, Ulster, Jefferson, Niagara, Jessica, Empire State, and hope great things for Moore's Diamond.

If compelled to make a narrower selection of roots for general culture, I should be sure to include Worden, Rogers 30, Herbert, Duchess, Lady, Iona, Brighton, Wilder or Salem, or both, Delaware, Goertner, Agawam, Lindley. I shall make my fall planting of Lady, Rogers 30, Brighton, and Faith.

In planting a vineyard there is all of five days difference in the ripening from vines on a southeast exposure and from vines on a west or north exposure. The ground *must* be thoroughly drained, well enriched, and kept well tilled. In my own vineyard I plant Currant bushes between rows, and from them alone get full profit for land used. Sometimes I grow Strawberries under the Grape trellises. The Strawberry vines mulch the Grapes, but they demand all the more manure, and it is questionable whether it be advisable to allow them to occupy the ground; yet they yield finely.

I would plant a few vines, at all events, in any locality, and with any soil or exposure, but I would not plant a vineyard before I had tested my chances. Invariably buy two-year-old vines, of a first-class dealer, and cut them down to a single eye. In two years you get a few grapes, in four a full crop. But it is indispensable to cut back thoroughly the first two years. Even then some year's growth will be double others.

The Grape crop is the one above all others easy to grow, and the amount raised might be doubled without trouble. I shall pick five bushels from the west side of my barn of the best Concords, besides fifty pounds of Lindleys from a smaller vine on the east side. Nature arranged this vine for this special purpose of giving abundance of fruit in small space. To cover barns and houses, long jointed vines like Lindley are not the best; Delaware is fine, Concord is good, Worden is better. For porches there are no better than Agawam, Worden, Herbert. The tohage of Agawam is peculiarly dense.

Two Recent New Fruits.

THE POTTAWATTAMIE PLUM. Of this new Western seedling, supposed to be a cross between the Chickasaw and the Swedish Sloe, Professor Budd, of the Agricultural College at Ames, Iowa, has very recently said, comparing it with the Wild Goose: "We had specimens, when they came, of the Wild Goose in same condition as to ripeness. The Pottawattamie is about the same in size and much the same in color, but far better in quality. There is absolutely no astringency in the skin or pulp. We regard it as a great acquisition, if the tree, on all soils, proves as hardy, or hardier, than the Wild Goose."

Messrs. Howard & Latimer of Shenandoah, Iowa, who are making a specialty of this Plum, pronouce it perfectly hardy and an immense early annual bearer. Four-year old trees have borne a crop of two bushels to the tree. It is a strong and vigorous grower up to its fourth year, and from that on the immense crops of fruit gives it a dwarfish habit and pendulous form of growth. Those who eat the fruit for the first time frequently remark, "It has a Peach taste." It has no acrid taste, and when scalded the skin, which is very thin, peels off like that of a Tomato. It is said to begin to ripen in Iowa about the 25th of July, and the season lasts three or four weeks. The sting of the curculio does not make the fruit drop, but every Plum ripens evenly and perfectly.

THE WILDER PEAR. "This new variety," writes Charles A. Green, of Rochester, N. Y. to us, "was sent me for trying last year. I was favorably impressed with its flavor and beauty, and requested more specimens. This summer I received a large basket of the Wilder. They came July 30th and kept in good condition in my warm office until August 8th, probably two weeks after picking, a remarkable thing for an early Pear. It showed no signs of rotting at the core. I sent specimens to John J. Thomas, who gave me a careful description of it and seemed favorably impressed. He described the quality as excellent, or very good. I carried a basket of the Wilder to Ellwanger & Barry's office and compared them with the Giffard and Andre Desportes, then ripe at Rochester, and evidently a little earlier than Wilder. Wilder was superior in flavor to either, and about the same size as the above two. Wilder was much larger last season. The drought of this summer affected its size. It has no superior in flavor among the early Pears, if it has among any. I regard it as exceedingly promising."

Canning Factories in the West.

The canning factory in Bloomington, Ill., according to a recent article in the local paper of that place, was at the time of writing running at full blast. From five to six hundred bushels of Tomatoes were daily hauled to the rear door, were picked over (and spotted ones at once rejected), then scalded and piled into buckets to await the peeling process. The number of those employed in the factory amounts to 150, nearly all of whom are girls. These girls had each a great bucket of scalded Tomatoes before them constantly, and the speed with which the skins were hustled off and the Tomatoes sent to the waiting cans, was remarkable.

About 15,000 cans were filled each day from then until the end of the season. The factory can hardly be said to have been running at full capacity, as help was lacking, but with fifty expected new hands the limit of capacity was to have been reached.

The seeds and plants were furnished in the spring by the canning company, and the Tomatoes were brought to the factory for $6.50 a ton. The two kinds of Tomatoes used were the Beauty and the Perfection. The greatest care, neatness and dispatch are used in canning them, and the result is mountains of shining cans filled with the luscious vegetable, all contracted and awaiting a lull in the rush of business to have their labels pasted on and to be shipped.

"I do not know of any investment which pays better than a canning factory," said Mr. N. S. Storrs, of Vernon Co., Mo., a man experienced in the canning business, recently. "Ordinarily they will return from 25 to 40 per cent, and even more where judiciously managed.

"You can dispose of the goods just as fast as they are ready for the market, and that feature enables you to transact the business with a comparatively small capital. As the work is done in summer, a cheap building will answer all requirements, and that together with the machinery for a large business will not cost over $3,000. That money would provide a factory giving employment to one hundred women and girls, and the disbursement each week for vegetables and labor would run from $800 to $1,000. An active woman earns about one dollar per day.

"Tomatoes, Corn and Peas are the staples. One acre of Tomatoes will ordinarily produce 400 bushels, which at twenty-five cents per bushel will yield $100. Sweet Corn is bought in the husk at $7.50 per ton. Peas are bought at fifty cents per bushel.

"In January the company sends a man out among the farmers and contracts for the growth of the supplies, thus ensuring certainty of production. The company furnishes all the seed.

THE WILDER PEAR.

"A company can make its own cans at less than two cents each, and one bushel of Tomatoes will make twenty 3 lb. cans. The cost of labor, labels and boxing in canning is very small on one can, and Tomatoes are now wholesaling at $1.20 per dozen, a price unusually high on account of the scarcity of the present season's crop. But at $1.00 per dozen, the usual price, there is a large profit in the business. There is even a larger profit in Corn than in Tomatoes."

THE COMPLETE GARDEN.*

XI.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 9.

PLANTING THE PLACE—THE HARDY TREES, SHRUBS, AND VINES.

Having now attended to the matters of selecting the garden site, the principles of general arrangement, the fitting up of the soil to receive trees and plants, and enclosing or dividing of the garden area, we may at this stage proceed with the important matter of planting the place, taking up in detail the selection of kinds throughout, and such special instructions concerning management as are adapted to the numerous classes used in stocking a complete garden. And, inasmuch as the growths of a woody nature, trees, shrubs, and vines, require more time than others for reaching fruitfulness and maturity, it is important that these should be among the first to interest the planter of a place; hence it is in order that they receive first attention here, following later with herbaceous, tender and seed-grown kinds. Before proceeding to special classes, it may be proper to consider certain principles of planting which apply with more or less force to all hardy trees, shrubs and vines.

WHEN TO PLANT TREES, ETC. The season between leaf fall in the autumn and leaf breaking in the spring is the natural planting time. In the case of Evergreens, which do not drop their leaves in the fall, this rule still holds good, for during this period growth in these is inactive, hence the trees are fit for moving. Were it not for the uncertain vicissitudes of the winter to come, or were all trees and shrubs absolutely hardy under all circumstances, I would lay down the rule that all be planted as soon after the leaf falling time referred to as possible. As these important points are not to be favorably reckoned upon, it is best to modify the rule, by saying that with such and such kinds it is best to take chances on fall planting, but with certain others not.

The kinds of trees and shrubs which, therefore, in the latitude of Central New York, I prefer to plant in the fall may be specified as follows:

All Fruit trees but stone sorts.

Cherry and Plum of stone sorts in light dry soil.

Raspberries, Blackberries, and Grape-vines, (with winter protection to prevent heaving).

Elms, Horse-chestnuts, Maples, Oaks, and the hardier native trees.

Birches, Larches, and Beeches *always* in the fall if possible.

To the above might be added the hardier shrubs, like Lilacs, Mock Oranges, Loniceras, Berberries, Native Viburnums, etc., and the climbing Ampelopsis, Honeysuckles, and native vines, but as these mostly transplant with the greatest ease in the spring, and when other kinds that should not be set in the fall are being put out, it is seldom worth while to start in on planting the former in the fall. The advantages of fall planting in the cases safe to venture on are found in the fact that the soil has a chance to settle well to the roots by spring, permitting the tree to then start upon a course of uninterrupted growth, and actually before the earth would be dry enough for good tillage. There is also usually more leisure for the work in the fall than in the spring.

Next to fall planting in the cases specified, I prefer to do all setting out of hardy trees and shrubs, Evergreens included, as early in the spring, after the soil works up mellow, as possible. A difference of a few weeks even, between early and later planting at this season, may make just the difference between perfect and indifferent success in the work. The hardier Evergreens may also be safely transplanted immediately after the growth of the season is completed, (usually by August), provided a moist spell of weather conducive to such operations should then prevail. By planting these under favorable conditions in August or September (not later), the roots have a chance to put in some work before cold weather, fitting the tree to safely withstand the winter ahead.

WHERE AND HOW TO PROCURE THE STOCK. Under this head there come up three important considerations. The first is the getting of reliable stock, true to name and grown under healthy conditions; the second, to get such as has been raised with a view to an abundance of healthy roots on the dug-up plant, and third, the idea of the least possible exposure of the roots from the moment of laying them bare at digging to their final covering in planting. These points closely observed and the road to good

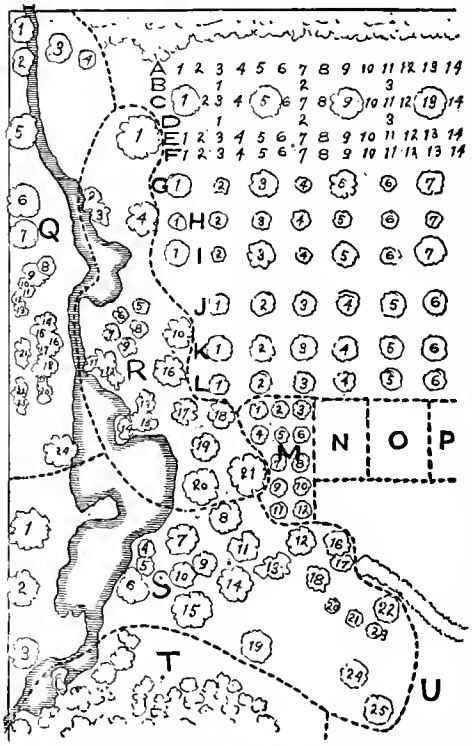


Fig. 36. Employing the Garden Plan (portion of Fig. 4) to aid the Planting, and as a Record for permanent future use.

results is easily made certain; a single one disregarded and "no luck in planting" would very likely be the conclusion arrived at by the end of the first season.

To get reliable stock the only safe course is to deal with growers or salesmen of undoubted reliability. To ascertain beyond any question as to who among nurserymen are to be trusted, if you do not know, consult with intelligent horticulturists in your neighborhood or elsewhere for a list of such. The nurserymen who advertise in agricultural or horticultural papers of high character are also, with very rare exceptions, to be trusted. Be especially on your guard against dealing with traveling agents who are strangers; of this class I believe there are more who are downright swindlers than of honest men, representing responsible firms. A difficult feature in judging here is that the bad will take every possible means to convince you of their being otherwise, and in this, they too often succeed.

A safe course in dealing with strangers is to find out their professed connections, with name, at a first meeting, giving them no further ear until, after writing to the house they claim to represent, you are assured of their reliability. Even then it would be best to reach your conclusions on what is wanted by independent inquiry among those who have fine home grounds of their own, or by the study of catalogues, books, and periodicals, than on the agent. You may be sure that under any circumstances these gentlemen will be determined to sell you all the trees they can of the kinds they hold in stock, keeping very silent about desirable kinds not possessed. But another point is that, if a large assortment is wanted, it can, for obvious reasons, be bought to better advantage of several nursery firms than of one.

Concerning stock grown with a view to plenty of good roots, I would say that most of that raised by reliable nurseries would be found satisfactory. To promote this condition two common means are employed by nurserymen, namely, frequent transplanting (equivalent to root pruning) and direct root pruning. If, by putting the question to a reliable nurserymen, you can satisfy yourself that he pays due attention to these points you would be safe in trusting your order with him. It might be well, however, to make the quality of the roots a condition of the acceptance of the stock when you send in the order. It should also be observed that the larger trees as they leave the nursery are, the smaller the stock of roots proportionately, this being the excellent reason why the most intelligent planters usually insist on receiving medium rather than large sized trees. The average of trees dug up from the forests and waste places are very inferior to nursery trees, for the plain reason of having poor roots because they have sprung up without transplanting (root pruning in effect) at any time and with no culture.

Lessening the period of root exposure. To accomplish this it is a great gain, either to buy all suitable stock you can from a local nursery, in order that less than a day need intervene between ground and ground in transplanting, (and at that keeping it protected with damp straw and blankets), or else to insist, if the trees are shipped, that they be boxed and the roots packed in moss. Put it down as a good rule that in no case can there be any considerable exposure of the roots to the air without damaging consequences. The best protection to the roots during the period between digging and final planting is to heel them well into the earth.

The ordering of nursery stock should be done at the earliest practicable moment after the last planting season, with a view to the next. The reason why, is that for your order to be received among the earliest at the nursery, and by demanding its early filling at the next digging time, this will be done, thus permitting of getting your planting along with at the very beginning of the next season, instead of having order filling crowded off until late, as must reasonably occur if it is sent in along with the rush of the season's orders. With orders sent in early revisions may be made later on without effecting the earliness of such being filled. An exact copy of each order should be made and preserved.

GENERAL NOTES ON PLANTING. Along with making out the order of planting stock, the plan of the grounds, which, in its main features should have been designed long before, will naturally be developing more fully in details. The place for particular kinds and the kinds for particular places will be quite sure to be determined fully only as the order itself receives its final touches, if indeed this part can ever be said to have been fully done.

The point I desire to make here is that in the intervening time between an early sending away of the order as suggested and the receipt of the stock, the location of every tree, shrub and plant should be so clearly decided upon, and then marked out on the plan, and such other provisions preparatory to planting be made, as will enable this part to proceed with no loss of precious time on the arrival of the stock. For all this the main

reliance should be the garden plan, or if this be small, an enlarged duplicate, and as many small light stakes, a foot or so in length, and smooth for writing, as there are individual trees, shrubs, etc. It will pay to be at considerable pains in seeing that the plan for this purpose is in good order and on good strong paper, as this will, besides aiding in the planting, serve perpetually as a record of the planting.

To show my method of employing such a plan see Fig. 36, which applies to a portion of the garden of Fig. 4. It will be observed that of this portion the fruit trees are brought into rows and groups, designated by *letters* from A to O, those of the ornamental parts in group sections separated by heavy dotted lines and designated by letters P and onwards, (double letters AA, etc., after Z). In the respective rows and groups then, individual growths are indicated by *numbers* from 1 upwards. By then getting up a clear record copy of the original order, and having the individual trees, shrubs, etc., of the same represented in each case by the letter of the group section or row in which it is to come, and in addition, by the number of its location in its group or row, the place of each one is at once made evident, and the name of any tree on the grounds can afterwards easily be determined by consulting this plan and the accompanying numbered list of kinds. The small stakes provided are to be used thus. There being as many of these as of individual plants to be set, each stake is to have the name of its tree plainly written upon it (first painting the writing surface lightly), together with the group or row letter and individual number in each case; then tying the stakes of the respective groups or rows for convenience into separate bundles, until the planting time. Just previous to the receipt of the nursery stock these stakes then may be taken to the grounds and be carefully set, each in the place where the tree or shrub it represents is to come. Planting day at hand, the distribution of all the stock to its exact place becomes a matter of the greatest ease, no matter how extensive may be the quantity or how varied the assortment. And always afterward, whether the trees be labeled or not, a simple and reliable record will be at hand to show what is included in the planting of the place. In case of inability to obtain certain trees, etc., desired, there need be not the least difficulty in substituting other kinds, by simply changing the names on the record to correspond.

(To be continued.)

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

MORE ABOUT EVAPORATING FRUIT.

Yes, we use brimstone in bleaching Apples and all kinds of fruit. Care must be used not to have it too strong, or to keep fruit over it too long. It takes but a few moments for the fumes to pass through a half or whole apple. To satisfy yourself on this point cut an apple in halves, hold one half over a lighted match as soon as struck and not the other half and lay the two halves side by side for an hour or two. Apples should be put over the heat as soon after being bleached as possible, though by our plan we run enough through our bleachers through the day to last over night. We pare and core by what is termed the "punched" plan, leaving apples whole to be bleached and then slice as needed.

If apples burn on one end or side of rack and not on the other it can be prevented by putting a narrow piece of sheet iron over the furnace under the part that burns. This throws heat on opposite side. Also spread the fruit heavier on the end of racks that burn. Don't let the fruit get "chip" dry before taking off but just a little "spongy" and a trifle moist. You can soon tell how dry to let it get by placing racks out on floor in the different stages of the drying and if they dry in a few minutes so as to be "chippy" they are dry enough.

The fruit should not be packed as soon as taken from evaporators, but allow them to lay a day or two till they sweat nicely. We usually pack in 50 lb. boxes or clean apple, sugar or cracker barrels. Barrels are more convenient and less costly than boxes, and fruit sells nearly as well in western markets so, but not as well in eastern cities.

We always "face" the fruit whether packed in boxes or barrels, and cover with clean white fruiting paper.

The net weight should be on each package. We prefer to hire help by the day. Paying by the bushel gives dissatisfaction, as apples do not run alike, and you can't always keep all workmen on same lot of apples, and too, they are apt to slight their work.

We calculate it costs us about eight to ten cents per bushel to prepare the apples. We get about six lbs. from a bushel, and make vinegar from cores and skins.

We calculate cores and skins if dried to sell at 2 to 2½ cents per lb.; will just about pay expense of preparing the apple, leaving six lbs. of evaporated apples to the bushel net, except cost of apples and freight, packages and commission. We run through our four Champion evaporators an average of four hundred bushels per day or about 2400 pounds of the dried fruit.

PRUNING APPLE TREES.

We prefer cutting away large limbs this month instead of March and April, as is generally practiced, although they may be trimmed safely and without damage to tree any time after April 15th to December 1st.

The great secret of trimming is to make open spreading heads, letting sunshine into the center of the tree. Different sorts grow differently. The Greening and King require but little thinning out in the top, while the N. Spy and Baldwin must be center pruned.

High colored Apples are what sell best and quickest. We prefer keeping orchards cultivated, these to grow in grass or sod, though on the rich soils of the West it may be best to prevent too rapid growth by seeding down.

We like trimming or heading a tree so that horses can pass under or very near to the body in working among and under the trees.

We cannot recommend too high culture or stimulants. Plant on good corn land and keep well cultivated and trimmed is our rule. Of course cultivating an orchard must cease in all cases by the middle of August, and the first of August generally is safe.

"Working round your Peach trees I see at this season of the year?"

"Yes, now is the time to dig out and kill the Peach borers. We dig them out with a sharp instrument, and then as you see, give the trees a good coating of lime whitewash, throwing into each pailful of the whitewash half a gill of salt and a tablespoon of carbolic acid, or a gill of soft soap. This keeps all grubs from working at the trees; we also scatter a handful of salt through the fall or winter around each tree, say from 8 to 10 inches away from body."

"Do you advise working round Peach trees in the fall of the year?"

"Not until late, say in November or December, if earlier than that it is apt to give them a start to grow, and thereby make the tree very tender. We also cut back at least one-half of the past season's growth, and if too thick trim out some."

"Apples I see are getting very ripe."

"Yes, and therefore a risky season to buy for barreling purposes, and the result is a large share have to go through the evaporators, which makes a busy season for us. We are now running through our four evaporators here and in Canandaigua 300 to 400 bushels per day, or making about 2000 pounds of evaporated fruit every 24 hours."

"I see you are setting some trees?"

"Yes, filling up some, necessarily, with the Ben Davis Apple. We like fall setting, and if banked up with earth just before ground freezes, and this drawn away in the spring early, they make a full growth next season. In fact, we prefer fall setting for all kinds of stock except Strawberries, if banked up and drawn away as we say."

"Rather late ploughing isn't it?"

"No, we are getting that ready for setting Strawberries in the spring. We have grown a crop of Hungarian grass or Millett there, and, as you see, ground is clean, and now by ploughing the stubble under and leaving it up loose in the furrows without harrowing the frost puts it in nice shape by spring; and by ploughing it again then it's in splendid condition for planting Strawberries. And, by the way, we are done planting much surface to Strawberries. Two acres *well* planted and cared for will yield as much as six to eight acres ordinarily grown. By well cultivated we mean to have ground ploughed as described, well manured, and plants set closely so as to make clean matted rows, and these kept well hoed and cultivated. One hundred and fifty to two hundred bushels per acre of such sorts as Crescents, Wilson's, Bidwell's, Sharpless, Downer's Prolific, etc., is not an uncommon yield from plantations thus grown."

"I see you have not trimmed your Raspberry bushes any?"

"Only once, when they were about two feet high. We have become satisfied that too late nipping back causes a late fall growth of wood or tips, and that these are easily killed back, especially is this so with the Gregg; but by allowing them to grow as you see, and not cutting back the last time till after the growth is stopped, the bush or cane that is left is well ripened and scarcely ever winter kills."

"I see you allow the old wood to stand yet. You did not do so formerly."

"No, but in that we have changed our practice, for the reason that the old ones are stiff and strong and prove a support to the new growth when most tender and easily broken down."

"Some of your Strawberry plantations must be pretty old?"

"Yes, four to five years; we find the first berries are what pay us, and we always get the earliest from our old beds. If ground is prepared and plants once set and cared for, as we before suggested, and kept well cleaned the first year, they will keep out grass and weeds pretty well for three or four years afterwards. The past season we sold one-third of our crop before our neighbor got any to speak of in market, and obtained for them 9 to 10 cents per quart, when for the other two thirds we *netted* no more than on the third sold first."

"Have you ever tried using up your Strawberries in any other way than to sell fresh?"

"Yes, we have made them into jelly with good success, putting them up into small tumblers and selling these for 10 to 15 cents each through the winter. The tumblers with tin covers can be bought for about $3 per 100."

"Do you sell Raspberries largely fresh?"

"Oh no, three-fourths we evaporate. It takes about three quarts to the pound if well ripened, which have never sold for less than 18 cents net."

"What are you doing with your Geraniums?"

"Digging them and cutting off tops and putting away in cellar with roots covered in earth."

"Sweet Potatoes! Why! can you grow such monsters here?"

"Yes, we grow them easily if planted out from 20th of May to first of June. We plow a deep furrow and scatter well rotted manure in the bottom, then throw a furrow over this from both ways and plant on top the ridge."

488. **Evergreen Hedge in Shade.** The Hemlock does pretty well under trees where not too much shaded; the Arborvitæ about as well. We know of none that will do better. We have seen Privet, a sub-evergreen, do quite nicely in such a position. The variety bearing a white berry is the best.—A. H. E.

507. **Hot-bed in October.** We can imagine of no use to which a hot-bed "ready for planting" can be put at this season. The fundamental idea of a hot-bed is to anticipate the growing season of spring and summer by getting an early start for various plants, and keeping them in healthy growth in heat until they can be launched into the congenial atmosphere of May and June. But to start the hot-bed now where would it take the young, delicate plants to? To the winter season, when the garden is locked up in frost and snow. Start your hot-bed in March of each year and generally you will hit the season about right.

Begonias as Window Plants.

The various Begonias of the flowering class, not embracing the tuberous rooted section, are among the most satisfactory house plants that can be employed for winter cultivation. Indeed it is but justice to say that they often succeed under conditions so unfavorable that few other plants amount to much alongside of them.

The special qualities which render the Begonias so useful as window plants are

PLANT OF BEGONIA RUBRA.

their freedom from insects, their adaptability to a close and dry atmosphere, and the ease with which they get along without full sunshine. Add to these the attractiveness of the waxy-looking leaves, and the beauty of the finely colored flowers of all the varieties, and the graceful, charming habit of growth of most of the varieties, and it is not difficult to understand why they are favorites.

In Begonia culture in the window some of the leading points to be observed are to have good strong plants by November of each year, for blooming during the months to come. For securing these early propagation is desirable, say in March or April of the spring previous. If plants started at that time are brought on in small pots, kept near to shaded glass until the middle of June, and having had the principle shoots occasionally pinched back, they should be sturdy little specimens, in the best possible shape for occupying four or six-inch pots by fall. The best place for them during summer is in a light, well ventilated frame, such as may be provided with the help of a few hot-bed sash, shaded with whitewash. If the lights are run off at night when balmy weather prevails the exposure will impart to them a great amount of vigor, and the flowers will come much finer than when they are never thus exposed to open air.

The soil for the Begonias should be rich and free—a good mixture consisting of loam, leaf-mold, and well-rotted manure in equal parts, adding thereto a good dash of sand. When the pots get full of roots a little weak liquid manure should be occasionally given, the great point being to keep the plants well in growth until the middle or latter end of September, after which time they should be placed in gentle warmth.

From November onwards a constant temperature of 55 suits them for promoting the blooming condition. These winter flowering Begonias may be well and easily grown in the summer months by planting them out in frames. Make up a bed of good soil in a light frame, and plant out the first week in June, potting them up again in September, or earlier if they are large enough.

In the matter of kinds for window culture those we shall here name are about the best we know of. For the engravings of two of these we are indebted to Mr. Chas. A. Reeser, the florist of Springfield, Ohio, in whose catalogue they recently appeared.

Begonia rubra. This is unquestionably the most satisfactory variety in cultivation, being of easy culture, and both in foliage and flowers most attractive. The leaves are of good size, a rich dark green and glossy, while the flowers are remarkably elegant, being large scarlet rose, of a fine texture. Of this plant we have seen a specimen so large as almost to fill out a window.

Begonia metallica is another shrubby variety of great beauty and excellence. It is both a good grower and an abundant bloomer. The leaves are somewhat triangular in form, the surface of a lustrous metallic or bronze color, veined darker; flowers a delightful pale peach, covered with red hairs.

Begonia Weltoniensis is another general favorite. It sends up so many stalks, all covered with shining, rich green foliage of such graceful shape, veined with crimson, that a pot of it soon becomes a most attractive feature in any collection. It is not uncommon to see plants two feet and a half across, and about that in height,—a mass of luxuriant growth,—and in its long season of bloom it is sprinkled over most profusely with exquisite rosy flowers.

Begonia semperflorens elegans. This fine and comparatively new variety attains a height of twelve or fourteen inches; a compact plant of medium sized glossy olive-green leaves. It is so free in bloom as to present the appearance of a fine bouquet. The flower is white in the center shading to a delicate shell pink, distinctly margined with bright rose, and enlivened with dense clusters of yellow anthers, producing a charming effect. It blooms freely in the winter.

It would not answer in making up a list of desirable flowering Begonia to pass over two of the older favorites, namely the Coral Begonia (*B. Saundersoni*) and *Begonia hybrida multiflora.* The former is really one of the best flowering Begonias, the flowers of which are of a scarlet shade of crimson, borne in profusion for months at a time, and the leaves slightly edged with scarlet. The last named makes a beautiful specimen plant, the branches being somewhat pendulous, the leaves small and the flowers of a bright, rosy pink, freely produced.

Are the Plant Windows in Order?

ELDER'S WIFE, DANSVILLE, N. Y.

The winter plants will about this time be taken in, if they have not yet been placed. It should therefore be seen to that every pane of glass of the window is securely puttied in. Before severe weather let strips of tea paper, half an inch or more in width, be pasted over every crack about the plant windows; it is better to ventilate in a more thorough and less promiscous manner, than through these tiny crevices, which have a way of ventilating at just the wrong time.

If the air is kept moist, as it must be if the plants are to thrive, the moisture will collect on the glass, run down, get between the sash and sill and freeze, springing the window casings out of shape, and drip off the inner edge of the sill on to the floor or carpet, unless some precautions are taken. The plant stand should have casters for convenience in moving away from the window on cold nights, and to attend to the drips. Take strips of old cloth dipped in melted grafting wax and press firmly into the angle formed by the sash and sill, have a piece of soft old cloth large enough to fold six or eight double and fit the sill nicely; this will catch the drips, and if a little attention is paid to taking it up and wringing, and then replacing, will effectually prevent the spoiling of the carpet from that source.

A Disease of the Violet.

E. E. S., BOSTON, MASS.

Among the Violet growers of the Eastern States much interest is manifested concerning the cause and character of a disease that, in certain localities, threatens to cut off the culture of this favorite flower entirely. I have now had an opportunity to observe this disease, both in Eastern New Jersey and in the vicinity of Boston, Mass.

At present it must be said that the trouble seems to baffle the most patient observer.

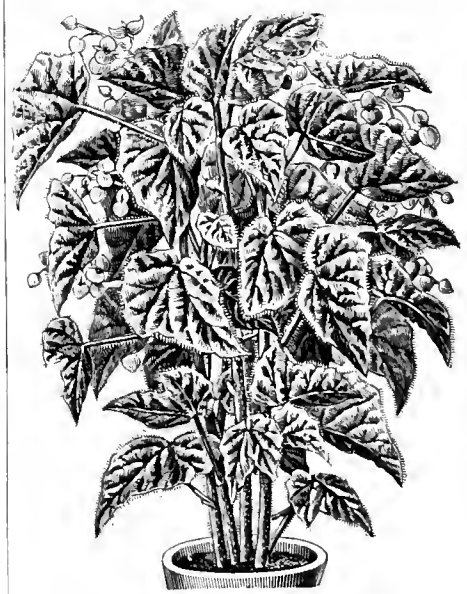
One grower at Boston, Daniel Gormley, thinks that, if the plants are put in their blooming quarters quite small, having grown them on poor, dry soil during the summer, thus inducing maturity and preventing an excessive growth of foliage, then when transplanted, put in rich soil and encouraged to a vigorous growth, the disease may be avoided, at least it is his experience this present season. Another authority, Michael Gray, Milton, Mass., advances, as the result of several years' observation, the theory of an insect, nearly invisible to the unaided eye, being the cause of the trouble.

The writer was shown a number of plants having the disease, from which, when disturbed, a number of minute insects could be seen to jump in every direction, being very active, of a grayish color. Mr. Gray's idea is that this insect punctures the leaves, perhaps depositing an egg, and the surrounding parts become affected, causing the characteristic spots seen on the leaf.

Mr. Thos. Stock, near Boston, has noticed a minute black thread-like substance about the roots, runners and leaf stems of diseased plants. Since noticing this he has discarded all such plants when preparing his new plants. This method resulted in a decrease of disease.

Mr. Gorden, of Dorchester, who makes a specialty of Violets, says he believes in changing both soil and stock yearly. His theory of the disease is that it is caused by some external means, such as a worm or insect injuring the root, or by a sudden increase of temperature.

Mr. L. H. Foster, of the same vicinity, lost



PLANT OF BEGONIA METALLICA.

all his plants last year, but so far from being discouraged he has gone into their culture heavier than ever this season, hoping to be more successful. His plants at the end of September were in splendid condition, and he thinks that the amount of attention given

them in the way of removing runners, decayed leaves, etc., has something to do with the progress and effects of the disease.

About a Certain Water Plant.—Nelumbium Luteum.

T. T. LYON, SOUTH HAVEN, MICH.

This somewhat rare aquatic plant, sometimes known as Water Chinquapin, Water Bean, Lotus, etc.; and which was originally supposed to exist only in the waters of the Schuylkill near Philadelphia, but was subsequently discovered at Sandusky bay, La Plaisance bay, and in the shallow waters at the mouth of the river Raisin, all near the western end of Lake Erie, proves not to be as rare as was formerly supposed; since, on the authority of Prof. T. H. Lewis, a Minnesota paper states that it is found also in Lake Ontario, and at several points along the upper waters of the Mississippi river, as at the head of the Rock Island rapids, just above La Crosse, and at the head of Lake Pepin; also in the Minnesota river near Mendota; and in Halstead's bay, at the west end of Lake Minnetonka, a noted summer resort a few miles west of St. Paul and Minneapolis.

In popular parlance it is usually called a Water Lily, although botanically it belongs to a distinct order. It is, by many, supposed to be the sacred Lotus of the Egyptians, from which, however, it differs in the color of the flower, which is greenish yellow, while that of the Egyptian is pink.

Philadelphia, in latitude 40°, would seem to be its limit southward, and Lake Minnetonka, in latitude 45°, its northern extreme, although the fact that it is indigenous in this land of frost and blizzards seems to indicate the possibility that it may yet be discovered even farther north.

The Egyptian Lotus (*Nelumbium speciosum*) was shown in a tank, along with Victoria Regia, at the recent joint exhibition of the Massachusetts Horticultural and American Pomological Societies at Boston, both said to have been grown in the open ground, although doubtless, both being tropical plants, will require thorough protection against frost, and possibly against a near approach to it during the winter.

A Beautiful New Hybrid Lychnis.

We are enabled this month to figure a new Hybrid Lychnis of recent origin in England, and with it figures of its parents, altogether forming an interesting group. For the drawings of these engravings and also for our information concerning this interesting new plant we are indebted to the Gardeners' Chronicle, of London, England.

That this hybrid, coming from two such showy garden flowers as the Mullein Pink, *Lychnis coronaria* (Figure 1) having deep crimson, velvety flowers, and the Flower of Jove, *L. flos-joris* (Figure 2) with clusters of reddish, purple flowers, should prove to be both handsome and desirable is no matter for surprise. It is described by its originator, Mr. Alfred O. Walker, as being very superior as a decorative plant to either parent. The habit resembles *L. flos-joris*, though the plant is larger. The flowers are almost as large as those of *L. coronaria*, but are far more brilliant in color, being of a lighter and more rosy-purple. In fact it is one of the most striking plants in a mixed border that is known, the color being very conspicuous, and it is a very valuable acquisition to the herbaceous border.

The most striking difference noted by the editor of the Chronicle is in the inflorescence, for the shape of the leaves and the color of the flowers are so variable in different specimens of a Mullein Pink, judging from those growing in our garden, that no great dependence can be placed upon them. Speaking generally, however, the leaves of the Mullein Pink, *L. coronaria*, are broadly ovate, while those of *L. flos-joris* are lanceolate, and those of the hybrid are ovate lanceolate.

In the hybrid the central flowerstalk is

Fig. 1. The Mullein Pink, Lychnis coronaria. *Fig. 2. Flower of Jove, Lychnis flos-joris.* *Fig. 3. The Hybrid.*

NEW HYBRID LYCHNIS: THE PARENTS AND THE HYBRID ILLUSTRATED. THE SINGLE FLOWERS NATURAL SIZE.

only about two inches long, and the two side branches (see Figure 3) are about of equal length, each bearing a group of flowers of which the central one is open and not far behind the primary flower. So that, as a matter of fact, where in the Mullein Pink we should have only one flower open at a time, there are in the hybrid certainly two equally developed at the same time, and perhaps three. This is of itself an advantage.

In the Flower Jove the central flowerstalk is exceedingly short, and the two side branches are of equal length, each bearing densely packed groups of flowers, arranged precisely on the same genaral plan, though more numerous. Hence the inflorescence of the hybrid is quite intermediate between that of its parents.

So far no good seed has been raised from the hybrid as might have been expected, but it is said that no difficulty is experienced in propagating the plants by division.

The Roman Hyacinth.

The Roman Hyacinth of commerce, the kind to be noticed here, is not, according to the Gardening World of England, the true Roman Hyacinth. The latter is *Hyacinthus Romanus* (first introduced as *Scilla Romana*) and having small pale blue flowers fading to white at the margins, blooming in May out-of-doors, but of no service as a forcing bulb for cut flowers. What now pass for the Roman Hyacinths are varieties of *Hyacinthus Praecox* and *H. albulus*, being really forms of the common garden Hyacinth, *H. orientalis*.

Of several forms of so-called Roman Hyacinths the best and earliest of all to force is the White Roman, *H. orientalis albulus*. If it is the smallest form of all it is also the purest white, and so early that it can be had in flower by December 1st. It is as hardy as the ordinary Hyacinth. The best bulbs are imported, being obtained from the South of France and Italy. Next in earliness is what is known as the Double White Italian, the flowers of which, however, are not white but pale rose and sometimes of a pale creamy tint. The Single White Italian has larger flowers than the foregoing and more numerously produced, but these two are not exactly white. The Blue Roman variety has smaller flowers than the two last named, and these are of a pronounced deep purplish hue, quite desirable for variety.

In the forcing of Roman Hyacinths, as in the case of all similar bulbs, it is of the utmost importance that the bulbs have proper time to develop roots after they are placed in the soil before bringing them into heat.

In pot culture five-inch pots constitute a very suitable size, and the bulbs being small and the leafage proportionate, three to five equal-sized bulbs may be inserted in each. Drain the pots well, fill them loosely with soil, and press the requisite number of bulbs firmly in the compost, so that when finished they may be just beneath the surface. When finished, stand the pots on a bed of ashes behind a north wall, or where they will not be affected by drought, or subject to undue excitement. Cover them over with several inches of ashes or earth, and allow them to stand there till new roots have penetrated the compost. Then transfer in batches as desired to the window or forcing house.

Cultivators who grow Romans in large quantities for market insert them thickly in boxes, growing them on until the spikes are well advanced, and the flowers almost ready to expand. By this method space is economized and the plants themselves can be better regulated or sorted into sizes. Disturbance of roots at this period does not appreciably affect the size of the flowers, while the bulbs—early forced ones especially—are worthless for the same purpose a second time, unless they have been recuperated by growing them naturally a season or two previously; but seeing that better imported bulbs can be bought cheaply, old ones are not worth the trouble of growing.

A rich compost consisting of turfy or fibrous loam, and well rotted manure in equal quantities, with an admixture of sharp sand to keep the whole open, is the choice of the best cultivators. We ourselves have never objected to the addition of some old leaf soil to the above.

456. **Effect of Leaf Fall on Fruit.** If the trees have lost most of their leaves the fruit will not be good. If it is nearly or quite grown, and would soon have been ripe if the leaves had remained on, it is possible that some of it may be eatable, but probably poor. If the trees so affected are winter varieties the fruit will be of little or no value.

413. **Grapes and Currants.** I consider making cuttings the best plan of propagating, selecting good thrifty plants and taking pains to get good branches or limbs; cutting to reasonably short lengths, setting out carefully; see that the soil is packed carefully around them, and after the first light freeze mulching well.—N. J. SHEPHERD.

318. **Yarrow in Lawn.** We have but one remedy for all weeds in grass plats, it is to root them out. Be sure you cut at least below the crown in every instance—even at that some kinds will throw up shoots from the roots, hence we say, as far as possible root them up. This costs labor; it saves trouble in the end.—A. H. E.

The Little Leaves.

"We must go," sighed little Ruby,
Orange, Topaz, Garnet, Gold;
"For the chilly breeze is calling,
And the year is growing old.
Good-by, quiet, sunny meadows
That we never more shall see;
Good-by, winding brooks of silver,
Snowy lambs, and dead old tree—
Dear old loving mother-tree."

From the branches down they fluttered,
Like a rainbow scattered wide;
And the old tree looked so lonely,
That was once the woodland's pride.
But the wind came wildly piping,
And they danced away with glee.
Ruby, Topaz, Garnet, Orange,
Soon forgot the poor old tree—
Poor old loving mother-tree.

But when skies of drear November
Frowned upon their wild delight,
All the little leaves grew lonely,
And they wandered back one night;
And they nestled in a hollow
At the foot of the old tree,
Sighing, "All the long white winter
We shall now so quiet be
Near our dear old mother-tree."

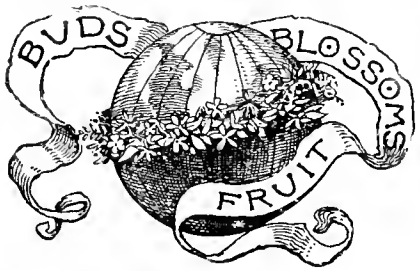
—*Harper's Young People.*

Red and White Roses.

Roses the lover gives to his love;
Roses we lay on the breast of death,
That nevermore fondest whisper can prove—
Which is the sweeter, answer and prove,
Passionate love, or sleep without breath?

For love you burn with a crimson fire,
For death you are pale as the winter's snow;
Warm for the one with the heart's desire,
Cold for the other, since hopes expire—
Which is the sweeter? When shall we know?

—*Louise Chandler Moulton, in Independent.*



Sort before storing.

Write for your own paper.

No rake to the late fall spadings.

Plant vitality lost is hard to recover.

Dusty Millers now need but little water.

We say again, dirty pots are abominable.

Flowers flourish for those who love them.

A word on plant culture: Don't overwater.

Free, raw drafts, are bad for any tender plants.

"A Common Sense Journal," one reader writes.

Crushed charcoal is a good ingredient in potting-soil.

Thanks for many compliments on our fine appearance.

For root pruning fruit or other trees fall is the best season.

Green Aphis cannot endure a sprinkling of tobacco dust.

It's well to pinch the first flower shoots from most of the young Primrose plants.

Some salt on the Asparagus bed is beneficial, no doubt, but spring is the time for applying.

If we tell you that Roses are gross feeders, we tell half the secret of their successful culture.

Late Salvias in pots should now contribute a large share to the gaiety of the window or conservatory.

All who aspire to gardening honors should at some time get in the way of raising many of their own seeds.

The Worst of the Century. This has been the most disastrous year for fruits for at least one hundred years.—*Geo. J. Kellogg.*

Against Hasty Judgment. I think one should take notes for five years before getting his opinions fixed concerning any Grape.—*E. P. Powell.*

"Lady" Flowers. All plants which have "Lady" in their names—Lady's Smock, Lady's Slipper, and the like, were by early Christians consecrated to the Virgin Mary.—*Mrs. V. H. Campbell.*

This Idea Will Keep. That scraps of tin tied several pieces one above the other, and hung in the Grape-vines, to constantly sway, will prevent the birds from spoiling the ripe grapes I have proved to my satisfaction.—*E. W. L.*

Variegated Smilax. A gentleman near Boston, Mass., has a seedling that is beautifully variegated, and it seems to be growing that way from the root. If it can be propagated and is permanent it will be useful in connection with the green variety.—*E. E. S.*

At this season, when readers everywhere are canvassing the idea of what papers to take next year, it is just the time for the friends of this journal to invite the attention of their friends to the merits of the paper. Specimen copies for such a use will be furnished gratis.

California Fruit Where all this comes from may be easily understood by the fact reported in the Pacific Rural Press, that there are at present in that State 2,700,000 Apple trees, while those of Peach number 1,200,000; Pear, 500,000; Plum and Prune, 600,000; Cherry, 400,000; Apricot, 500,000; Orange, 1,600,000; Lime and Lemon, 500,000, besides 70,000 acres of Grape vines now in bearing.

The Valley Lily Bed. Would you improve the old bed of these? Then take up one-half the plat in square blocks like a checker board and a foot deep, filling the openings with garden loam, trampled down firmly. Over the bed thus treated scatter two inches in depth of rich, partly decayed manure. Next spring you will see Lily of the Valley spikes greatly superior to the ordinary run, and a year later they will be still better.

Double Pointed Tacks for Glazing. We learn that Mr. E. D. Kaulbach, of Malden, Mass., in his glazing uses a double pointed steel tack with much satisfaction, realizing especially a saving in time and a gain in the way of keeping the glass tight, as the sun does not seem to draw these out, as is the case with the zinc points. The cost is five cents per hundred; two are used for each light of glass, and they can be obtained of almost any hardware dealer.

Crowding in November. There is now a great temptation to overcrowd the plants newly housed, through the desire to carry along all recently propagated ones as well as those lifted from the summer beds. It is always better to destroy surplus stock, sifting such out with a free hand, than to damage a whole collection by cramming too many plants into any given space. And there should be no stint of air all during this month for rendering the stock strong and hardy, preparatory to the depressing season ahead.

A Winter Peach. Referring to the Salway Peach, in a recent letter to us, accompanying some specimens of the Peach, Mr. Henry Lutts of the Youngstown, N. Y., nurseries, said that the fruit, if kept in a dry, cool room, will last until December, or longer, he having had fine specimens until February 20th. This is what he says about managing them: "But few seem to know how to handle this Peach. Pick it as green as the samples sent, and when you want it to ripen, put it in a warm place and they will soon color and ripen."

Many have renewed and also sent in clubs to this journal during October in a way that would rejoice the heart of any publisher. As POPULAR GARDENING AND FRUIT GROWING may be deserving it looks to the horticulturists of the country to give it support, both by their own subscriptions and in recommending it to others. Very many have done remarkably well in these respects; it would be a pleasure to hear favorably from very many others who have not. Does this hit you, reader? If so, will you not come to our help? And this we can say further, the more subscribers the better paper. Progress and improvement are the watchwords of this journal.

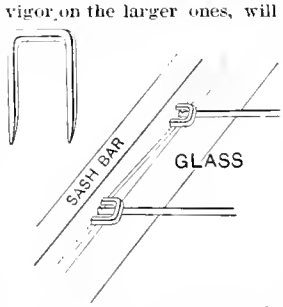
Lettuce on Ridges. For several years I have kept fall-sown Lettuce plants over winter, producing an early crop in the spring, by a simple course, which I am not aware is generally in use. This I do by ridging the ground to have variations of about six inches, these extending east and west. Then on the northern slope of the ridges I set the plants as shown by the inclosed pencil sketch. I take some pains to firm the soil when planting. All the winter care given by this method is to scatter some straw over the plat in late fall, and the plants manage to come through remarkably well, giving early head Lettuce in the spring.—*J. E. Welch, Berks Co., Pa.*

The Northern Light Grape. Mr. P. E. Bucke, of Ottawa, writes to the Canadian Horticulturist in glowing terms about this new white Grape, which originated on the banks of the Ottawa, Canada. He says it is the best white Grape in cultivation—indeed, a perfect gem. The color is greenish-white, with pink fruit stem. The leaf resembles the Concord both in size and texture, but is more leathery; there is no foxiness about the fruit, either in smell or taste, and it is very sweet when fully ripe, with a slight subacid. It ripens with the Moore's Early. The vine is a tremendous grower, and hardy. It has borne fruit four years; the first year, two bunches; second year, 20 pounds; third year, 25 pounds; and this year, about 20 pounds.

Clean Advertisements. Believing as POPULAR GARDENING does in clean journalism, even to the advertising department, its good friends can hardly have any idea of the *thousands* of dollars worth of cash advertising that is constantly turned right from our columns, simply because we will not, even for cash, admit the cards of those in whom we can have no confidence. And yet we see these objectionable advertisements right along in many other papers, even the religious journals, and we know that some one suffers, as a consequence, for unscupulous advertising can only be paid for at the expense of victims. This fact we hold up as another reason why lovers of clean journalism should find pleasure in heartily supporting the present periodical.

Garden Neatness in Winter. POPULAR GARDENING takes no pleasure in that kind of gardening which is over scrupulous for neatness in the summer, and then utterly disregarding this quality through the winter. We like to see a snug and clean lawn the year around, and with some attention to leaf raking after the main fall of leaves it may be easily so rendered. Then the cultivated surface of the flower beds and borders, and of the vegetable plot, will look incomparably better for an orderly facing over of the top with the digging fork, instead of its being left rough from plant lifting, or from taking in the crops of the latter. To neatly tie up the ornamental shrubs and climbers to stakes or trellise, protecting such as are the better for winter cover with straight straw, neatly bound on with twine and the top of the coat squarely cut off, will also help wonderfully in giving a pleasing winter finish to a place.

Chrysanthemums will hold a supreme place among ornamental plants for a month or two to come, bestowing rich rewards for the patient labor and skill called forth in raising the plants. If now liquid manure be given liberally to the plants, and these be never allowed to suffer from lack of moisture at the roots, a finer development of bloom may be expected. To nip out the smaller buds, enabling the plant to bestow all its vigor on the larger ones, will also be found a more satisfactory course than to permit all to remain. Speaking of watering the plants, let it be remembered that in case of moving from the moist atmosphere of the frame or greenhouse, to the show room or window, the air of which is almost certain to be dry and oppressive, and any slight shown them in the matter of extra watering, here required, will soon tell against beauty.



Glazing with Double Pointed Tacks.

A Parlor Landscape. The pretty idea shown forth on the next page was conceived by a Mr. Bruen, and is brought to the attention of novelty lovers by J. U. DeVeer, 19 Broadway, New York, to whom we are indebted for the use of the engraving. The main feature of the plaque is a water pocket on the reverse side, corresponding with the lower part of the scene illustrated in the engraving, and which on this side is sown with Grass seed that soon springs into growth, the upper part being painted with some appropriate figure. These plaques are made to be about 8 inches across, and if desired the entire surface can be sown. The maker also suggests the use of small bulbs, Pansy plants, etc., in the Grass of the foreground. To sow the plaque it is soaked in water for 24 hours, after which the seed is sprinkled on where wanted, and the pocket at the back is filled with water. These little affairs are not at all expensive, Mr. DeVeer furnishing the plain ones at seventy-five cents apiece, and from that upwards.

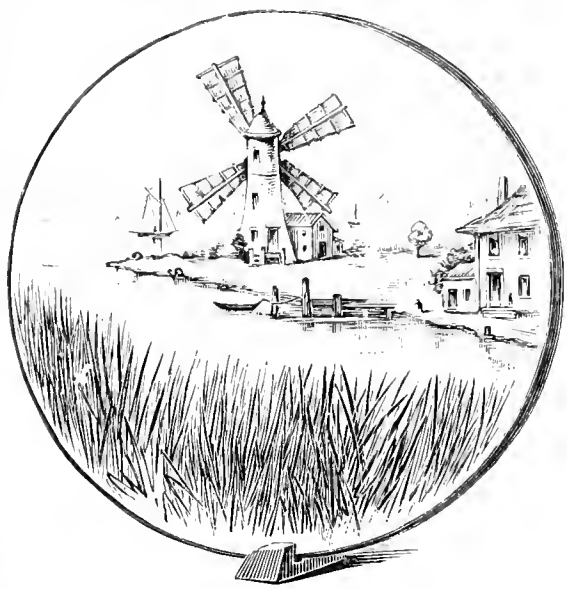
The Compost Heap is Dame Nature's suggestion. She teaches that in order to keep up soil

fertility the leaves and other refuse growth of the summer must be returned to the earth again as plant food. The rich black earth and peat of our woods afford an illustration of her hand at "compost" making. A compost heap, or even more than one, should be found in every garden. There is rubbish enough about the premises, with the leaves of trees and vegetables, weeds, walk scrapings, screenings from the potting shed, fruit parings, etc., to make a large pile of valuable plant food. With this may be incorporated some stable and hen manure, offal and sods from fence corners, muck from ponds and ditches, mold from the woods, a little slaked lime, all built up layer by layer into an oblong square and left over winter. The addition of house slops, by pouring such into a depression in the top of the pile and allowing it to filter through the compost, will add quality to its manurial value. If the heap be made in October and then is cut down from the end finely with a sharp spade, and thrown over just at the opening of winter, it will have altogether gone through such a change, by fermentation and freezing, that by spring it will be quite fit for applying to the soil. In this way one can get up a valuable supply of manure at a small cost. It would be a pity indeed if all our enterprising gardeners would not avail themselves at this time of the opportunity to get up a rich compost heap for next season's use.

A Visit to Old yet New Scenes. Quite recently the writer found great pleasure in visiting the scenes of some of his earliest labors in the branch of gardening, plant raising, etc. It was to the seed, plant, and marketing establishment of Messrs. Peter Henderson & Co., of New York and Jersey City, N. J., and where as a younger man the now conductor of this journal served a special term of apprenticeship in the branches named. But what a change has marked the place in sixteen years! Extensive as we then realized that the establishment was, associated as we were in its care, it has so outgrown all former limits as quite to obliterate many of the earlier familiar landmarks. This is true of all departments. In the greenhouse range what constituted the block of narrow single-walk houses, numbering "1" to "19" of that day, has now given place to larger, wider, and in every way finer houses in the same space. But beyond the two older Rose houses, 20 x 300 feet each, the change has been still more marked. Here on land that sixteen years ago was devoted to gardening purposes, there have sprung up block after block of new structures, until to-day an area of fully four acres has been converted into a veritable city of glass. And this work of extension still goes on; at the time of our visit a large addition of cool houses was in building and nearing completion. To enter into anything like a detailed account of the contents of these houses is not the purpose of this article. Suffice to say that the same conspicuous signs of large assortment, of superior culture, systematic management and orderliness which we have always recognized as a peculiar mark of this model commercial establishment were present throughout. But this, the plant and gardening department of the establishment, is after all but one branch of a stupendous business that takes pride in furnishing "everything for the garden." To show the close relation between the garden and seed departments, which latter in New York, were visited the same day, it becomes only necessary to refer to the seed testing features of the former branch. Here under glass on the day of our call we found tests as to the *germinating quality* of seeds going on on a large scale, including more than 2,000 lots of seed, while in the garden outside an area was devoted to a test *for purity* of 600 varieties by actual field culture. For the seed branch thus to be able to fortify its customers on the one hand against impurity of the variety and on the other against any possible inferiority of vitality, is an advantage which multitudes of good cultivators have long since shown their appreciation of. In the seed house proper in New York the same signs of expansion since our personal connection here were visible

How a Subscriber Winters his Lettuce.
(See opposite page.)

but even in greater degree than in the branch referred to. Then a moderate sized store, occupying a few floors, now a store of double the former width (being 52 feet wide throughout), with a greater depth than formerly (being 130 feet in length) and embracing seven floors that are devoted to the seed and implement trade. These floors are connected by two steam elevators that extend from sub-basement to loft, besides ample stairways. To enter into a detailed account of what we here saw recalling old times would also be quite impossible within the limits of one article. It may answer to say that from top to bottom of the establishment there were met the old time signs of activity now greatly extended. At the time of our visit the new crop of seeds were arriving and being handled and stored, and the fall bulb and grass seed trade was in full swing, both in the wholesale and retail departments. In one storage room we could not but note a solid and convincing illustration of the recent advance in the seed trade in a single lot of New Jersey Wakefield Cabbage seed, which amounted to three tons, and another of Early Summer Cabbage seed of four tons. The extent of the grass seed stock was another surprise. Altogether in this brief call upon old friends and a former esteemed employer we were more forcibly impressed than ever before with the great work it is in the power of one man by intelligent energy and perseverance (in late years aided by his sons) to build up from a small beginning, and all within the bounds of considerable less than a life time. But the work of Peter Henderson is not to be measured by his acres of greenhouses and the greater part he has had in building up the most extensive seed trade by catalogue in America to-day, for in addition to these he has, by the writing of numerous well known practical works, now standard, on American gardening, as well as by his numberless articles on the same subject in periodicals, made an impress on the good fortunes of thousands throughout the country that is simply beyond compute. That his influence for good on improving the horticulture of America to-day has been and is second to that of no one other man, living or dead, is in the writer's mind a matter admitting of no question.



A PLEASING PARLOR NOVELTY; NATURAL LANDSCAPE PLAQUE

Floral Notes by a New York Observer.

Autumn weather is bringing people back to town, so there is some prospect of more work for the florists. Taken all around this has been the dullest, flattest season for years, as far as the florists are concerned, and the natural result is that there is very little in the way of novelties. It is not only in town, either, that trade is poor; the great florists at the watering places complain equally with those in the city.

There is, of course, a crop of autumn weddings as usual. But for the most part they do not take place in town; they are either at a country residence or country church. The decorations, to be in keeping with the place, are chiefly field flowers and autumn leaves. They are usually very artistic when well arranged. Roses and Lilies, with the stereotyped Orange blossoms, are still the favorite bridal flowers, and at a good many of these country weddings the bridesmaids have carried golden rod, which makes a very aesthetic harmony with a white frock. Baskets are more often carried than bouquets by the bridesmaids.

The attempt to be original has made fashionable women affect a good many novel flowers for bouquets. One peculiar combination made by Hodgson at Newport was blue Passion Flowers and Mignonette. It was tied with reseda-green ribbon, and made a perfect harmony in minor tones.

Allamandas are used to a considerable extent in table decorations. Their color shows up very well by lamplight, which is not the case with all yellows. The flowers are usually mixed with Maiden-hair or Asparagus.

As long as Hydrangeas were in bloom they were used to a tremendous extent, even in plateaus on the table, though they are certainly very coarse flowers for such a purpose, and it was certainly impossible to mix any other flowers with them.

The first flower show of the season was at the American Institute Fair the second week in October. It was not a very large one, being chiefly taken up by amateurs, but there were some very good designs by florists. It is always amusing, at a show of this sort, to see the ideas expressed by the different exhibitors in making an entirely new and original design. One of the amateur exhibitors displayed, in the line of novelty, a miniature garden, built of mosses, ferns, and evergreens, with a couple of swings, in which were very waxy dolls wearing satin Mother Hubbards. The effect was extremely painful, though no doubt the maker's intentions were good, but certainly no outside adornment save a bow of ribbon—and not too much of that—is permissible in floral designs.

One beautiful funeral design, though not especially new, displayed admirable taste and workmanship. It was a standing cross with slanting arm, made entirely of Ivy leaves. Brought over the arm, and to trail spirally about the standard, was a garland of Niphetos Roses, White Bouvardia and Violets. At one side of the base was a cluster of Mermets. Another straight standing cross, also of Ivy leaves, had over the arms a crescent wreath of Perle Roses and Yucca Filamentosa. Yucca flowers come in very well in funeral work; their waxy pallor is very effective, and they stand well, even when handled rather roughly.

Another pretty design was a flat cushion of Moss, on which was a cross of light flowers, with a garland over the arms. One new funeral design was peculiar rather than beautiful; it was a shield-like panel of Ivy leaves, resting on an easel. At the top was a slanting anchor of Pansies. Below this was an urn of Marigolds, banded with Tuberoses. The urn was exactly the shape of a druggist's mortar, minus the pestle. If the pestle was added, it would do admirably as a funeral design for a druggist; in any other case it would be too suggestive.

A pretty idea for a bridal bouquet was the use of our little native Orchid, Spiranthes cernua (Ladie's Traces) in combination with Niphetos. The Spiranthes is a very dainty little thing, and most fragrant withal.

There are many very fine Dahlias grown now, and they make fine effects for showy work. A very handsome basket of these flowers was a tall flaring trumpet of dull green, filled with bright red Dahlias of all sizes, with their own leaves. Another showy thing was a dull yellow Majolica vase filled with all sorts of Marigolds.

A straight, upright basket without handles is very handsome when filled in pyramidal form with Roses and Heliotrope, but, like the French fish baskets, much depends on the way the flowers are arranged.

Most women now affect a liking towards some one special flower, a fancy prevalent with theatrical stars. The tigerish Bernhardt wants only rare Orchids and night-blooming Cereus, while plump, sousie Pauline Hall prefers Mermets and Violets. Clara Morris prefers wild flowers, and the Langtry seems to be fond of Violets, judging from her corsage bouquets, though we often hear of the presentation of Orchid blooms from her admirers.

EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Sign of Richness. As a rule the darker the flesh in fruits generally the higher the flavor. In acid fruits darkness usually indicates greater acidity.—*Professor Goff.*

They are Marked The whole generation of Russian Apples, so far as tested in this country, can be generally distinguished by their coarse texture and lack of spicy aroma.—*Van Deman.*

The Variegated Rubber Plant. One plant five feet high, at the September show of the Massachusetts Horticultural Society, attracted much attention. For ourselves we should prefer the plain green leaved plant.

What One Variety Can Do That careful observer, P. J. Berckmans, of Atlanta, Ga., now president of the American Pomological Society, says that the introduction of the Cuthbert Raspberry has revolutionized Raspberry culture throughout the Southern States.

Potash and Potash. Mr. A. S. Fuller, in a discussion on fertilizers at the American Pomological Society, laid stress on the important fact that potash from feldspar is comparatively worthless, in fact he don't believe it is worth anything as a fertilizer, while that from wood ashes, *having been once through the plants*, is valuable. Analysis shows that both are potash, but plants know better than to accept them alike. It is a point worth the attention of all cultivators who employ artificial manures.

"Flowers," said Mrs. Marie Rodmyer in a paper before the Missouri State Horticultural Society, "have an irresistable way of robbing the housewife's labor of its dull monotony. It is possible to make the poorest habitation charming by the judicious display of plants and vines about the doors and windows. The love of flowers grows with us as we are initiated into the mysteries of their culture and habits, in watching the generation of seeds, and the formation of tiny rootlets to cuttings in sand."

The Whole Secret. The veteran Samuel Miller, in commenting on the success of a horticultural fair held at Boonville, Mo., asks "how has this unprecedented success been accomplished," and then answers himself thus: "Simply by a few of the right kind of men taking hold of the thing with a noble array of assistants around them. They meet once every three months, which is, perhaps, better than monthly, as the luke-warm members get tired if they have to attend too often; while in three months they feel a curiosity again." He thinks the grand success this Society has made should induce other counties to each start a horticultural society.

A Country Celery Show in England. In a Lancashire town, at a Celery show referred to by the London Garden, there was gathered together a remarkably good collection, not only of Celery, but of Potatoes and Pansies, of Cabbages and Cucumbers, of Fuchsias and fruit, vegetables and flowers. But the Celery was decidedly in the ascendant. Behind the winning lots of this latter edible were the copper kettles, or britannia-metal teapots, the latter given as second prizes. The winning lot of untrimmed Celery weighed 14 lbs., 4¾ ozs., and the corresponding victor in the trimmed class 9 lbs. 8¼ ozs. These weights will give some indication of the size, and from what I could see of the bunches they were tender and beautifully white. Nights and days had been spent in their culture, heaps of manure had been supplied to the ground around them, and doubtless during the week previous to the show the grower had worked by day and set up all night watching his plants against the designs of some unscrupulous opponent.

Insuring Clean Berry Picking. I have my rows numbered one, two, three, and so on, up to the whole amount. I take a sheet of paper and nail it on a board, and number the lines. My pickers come. I have a little daughter 14 years old who usually does this checking business; beginning with patch No. 1, Lizzie Burns you take patch No. 1; some one else take No. 2, etc. There are all my pickers with the rows numbered, and the name of the picker to each row. I make it my business to be about, and I look down, and here is a row that isn't picked clean. Who picked No. 10? The record says so and so picked No. 10. She comes back and picks the row over again, and loses money while she is picking. They do not like to be laughed at; consequently, they are picked very clean, if you bring them back once or twice. Any child that knows numbers and can read and write, can manage a whole picking and keep the patch picked clean, by having a superintendent.—J. P. Ohmer, before Ohio Horticultural Society.

A Flower Show at the Far North Those communities in more favored sections that are without a horticultural society of their own can look way beyond the northern boundary of the Union, and behold a thriving one. We refer to the floral society of Winnipeg, Manitoba, and its work. From the Northwest Farmer of the same place we make the following abstract concerning a recent Flower Show held at Winnipeg: "The florists have this year made a spurt that has left all their former efforts quite out of sight. The only regret is that the show was so much a Winnipeg one. Capable growers from Portage and elsewhere ought to have been represented, but in spite of this defect the show was a most gratifying one and every department amply filled up. In the three professional exhibits, Mr. Davies' best dozen of plants were in great form—fine trusses, good varieties and well brought out plants. Geraniums were, if anything, the best thing on exhibition. Balsams, excellent. Alston's Gladioli, too, were very pleasing. Fuchsias a good way behind what they ought to be. Roses good, but rather too late in the season. In the competition for 100 stage plants Alston had a few rare plants: Euphorbia splendens, 12 varieties of Caladium, Libonia floribunda, Crotons, Hibiscus and Plumbago; but Davey's Abutilon, three Oleanders, and Ficus elastica were very good, too, and might have stood higher. His grand Antirrhinum was the best bloomed border plant in the room. Cut flowers, in large, varied and excellent display were just in season. Davey's two dozen (twelve varieties) of Asters were a grand lot—the choicest specialty in cut flowers. The amateur collection of cut flowers from bona fide amateurs must be specially noted, and all the private flower pots seen should be mentioned as showing what progressive amateurs may with a fair amount of care achieve in floriculture. Risk showed the grandest Pansy yet seen in the country. From a very small town plot he showed 21 different lots, netting 19 prizes, of which 14 were first, and his Balsams were better than any shown by the professionals. In wild flowers Hon. Consul Taylor had things all to himself, coming in first.

Identification of Varieties of Hardy Orchard Fruits.

[*Abstract of paper by H. E. Van Deman, Pomologist of the Department of Agriculture, before the American Pomological Society, Sept.* 15.]

All classification of natural objects may be said to be only approximately correct and strictly arbitrary. The established rules for such classification are frequently found to be unsuitable. The further we proceed with this classification the more complex and difficult it becomes. It is easier to distinguish and separate the natural orders of plants than the genera and species; and when the subdivisions of species are reached even the most learned doctors disagree. At this critical place and upon this treacherous ground the pomologist is obliged to make his way.

To be able to recognize every variety of our commonest fruits is utterly impossible, even by the most experienced. However, by carefully studying certain characteristics, and having a vast deal of experience with specimens grown under different conditions of culture, soil, and climate, one may become able to generally determine the names of varieties. To give in a simple way my views of what may be the cardinal points in such identification is the substance of the hope that inspired the present attempt.

All will agree that certain characteristics of fruits are more constant than others; these known and we will have gained one point. To my mind, considering all classes, there is no one character so fixed as the form. This will in the main prove true of all kinds, and as well of the immature as the fully developed specimens. Take the Apple or Pear before fully out of bloom and a difference of varieties may be noticed by their elongated, rounded, or irregular forms.

To some persons all babies are alike, but not so to the nurse or mother. So of the observant pomologist and his fruit. A Chenango the size of a marble is not the shape of a Rambo, nor would a Vicar half so large be taken for a Sheldon. Indeed it would not be hard to tell the difference between such marked varieties even before their petals had expanded. A cluster of the compactly formed Elvira Grape could be told from one of Creveling, or even Concord, when only large enough to be observed at all. With growth these peculiar forms enlarge rather than change. Even starvation would not materially alter their shape. Let this then be our main guide in identifying varieties. Of conrse there are frequent, sometimes radical, variations from the typical forms, occuring from sports of nature, or by accident, such as stings of insects or fungous diseases.

Another step will be to define the several characteristics of varieties, and place them in their relative positions. To do this, we will take up the several species of hardy orchard fruits in detail, comprising what are usuaBy known as the pomes and drupes. First among these is

The Apple. FORM. Observed from a point perpendicular to its axis, may be round, flat, conical, oblong, or cylindrical; or from either end it may appear round, elliptical, angular, ribbed or scalloped. These latter forms may be called regular when round or nearly so, and irregular when otherwise. Then there are other peculiar forms, such as inclined, as in case of the York Imperial, or unequal, like Cooper and Colvert, in fact, like very many Apples.

THE BASIN. The depression almost always found at the blossom end of the Apple, and in which the eye is set, is either wide, narrow, shallow or deep; regular like that of Fall Pippin, waved as we see in Northern Spy, or folded into wrinkles like YeBow Bellflower. In a very few Apples and some of the Crabs it is wanting.

THE CAVITY is at the opposite or stem end, and is sometimes very deep and narrow, or wide and sloping like Rome Beauty. Pryor's Red and Pewaukee have the cavity almost filled. In the case of Swaar, Roman Stem, and a few others, it is marked by a peculiar welt, and said to be lipped.

THE CORE is equally well marked, and usnally conforms closely to the exterior shape of the Apple. Some varieties have very small, compact, or closed cores, while others, like Ortley, are large and open. If the outline meets at the point of the calyx-tube, it is said to be meeting, if otherwise, it is clasping. I have found this to be quite uniform in those of one variety.

THE FLESH is perhaps the next character least subject to change. Who does not know the difference in weight between Yellow Newtown and Ben Davis, or the color of the flesh of Fameuse from that of Winesap, or the difference in taste of a rich and spicy Grime's Golden, a melting Primate, or a coarse and acid Oldenberg? The flesh of an Apple may be said to be coarse, fine, tender, or firm; white or yellow; dry or juicy; and in flavor sweet, sub-acid, or sour, rich or insipid. Of course climate and state of maturity have much to do with the flavor, but less as regards color and grain.

THE EYE, which is composed of the calyx and the small cavity which is hid by it, is another reliable mark. There is a difference in the width and length of the calyx-tube also. If the sepals form a closed or an open eye in one specimen of a variety, it is a good indication that all others of the same variety are similarly formed.

DOTS on the skin are very likely to be uniform in color, size, and shape on one variety, except their being smaller and closer to each other towards the eye. They are numerous or scattering, large or minute, dark or light, round, elongated, or star-shaped, and surrounded with light or green bases. Although small, these dots are in no wise to be overlooked.

THE SEEDS may be numerous or rare, large or small, yellowish, like Hightop, or grey, brown or black. In shape they vary also, from short and plump, to slender and imperfect, as may be found in King of Tompkins.

THE SURFACE is sometimes uneven, lumpy, or pimpled, again it is smooth and glossy, like Wealthy, or waxy to the touch. Lowell is often called "Greasy Pippin" from this cause. All grades may be found, from a surface like polished glass, to the rough and rasping coat of the Russets. Color is a striking feature, but it is so often changed by climate, culture, season, sunshine, or shade, that we are apt to be misled by it.

If reddish stripes are never displayed, but merely a blush, or if no red color appears at all, it is proper to call the variety self-colored. Those

that are striped or splashed with red in its different tints and shades, form another distinct class, and also the largest.

That peculiarity which we call russet forms the third class as regards color, and is most puzzling. Roxbury is usually distinct enough, but varies with the conditions of growth and climate. I have seen Pryor sometimes heavily russeted, and again as brightly striped as Ben Davis. There are more or less russet marks on nearly all varieties, and especially about the cavity, which is indeed a very good guide to their identity. In some it gives a sort of bronzed appearance. Another form is a sort of leather-cracked appearance about the basin, peculiar to very few kinds.

One of the most peculiar marks is what might be called pin-scratches, running from stem to eye, notably on Talman and rarely on Keswick. They never exceed five, and in the Northern climates are much more distinct than in the South and West. Not to be overlooked is what we call bloom. The Russian varieties and the Crabs are almost invariably covered with it; it is a reliable mark of identity. Another characteristic is a grayish white coating, such as is seen in stripes upon White Pippin and White Winter Pearmain. Sometimes it is suffused with other colors, giving a dull color to otherwise bright skin.

THE SIZE of all fruits is so varied that we must not lay too much stress upon this point. We see Lady Apples as big as average Maiden's Blush, and Fallawater the same size; then we are forced to depend on shape, or almost any other indication. Apples may be graded as very small, small, medium, large, and very large.

THE STEM is with some kinds a constant mark, but it often fails to be so. It may be short, medium, or long, and stout or slender. Occasionally there is a pulpy growth upon the stem, which may be denoted as fleshy. The points of resemblance between the pomes are so close that but little deviation is necessary, and a repetition of descriptions will be avoided whenever possible.

The Pear. FORM. May be described as for the Apple, except that many kinds are pyriform, instead of "conical," and turbinate or top-shaped is very common. Some, like Kieffer, which taper towards both ends, may be called biconical. The definitions of the stem end or apex, as it should be called in most Pears, may be simply pointed like Tyson, depressed as the Angouleme, or with the stem deeply sunken, when it resembles the "cavity" of the Apple. Most of the Asiatic Pears are thus formed.

THE CORE differs from that of the Apple in being sometimes hard and gritty.

COLOR. As to this, there is an almost entire absence of striping with plain colors, exceptions being found in some kinds, especially when grown well to the North.

THE STEM has a tendency to be set at an angle to the axis of the fruit, being then termed inclined. The flesh is apt to be buttery, melting, and often granular.

The Quince varies but slightly in form. Some have a plainly defined neck. Some are more angular than others, but all are slightly so. In size they vary quite decidedly. The season of ripening gives little clew to the name.

(To be concluded next month.)

How I Grow My Chrysanthemums.

[A paper by George Trussell before the Montreal Horticultural Society.]

This paper was written in conformity with the conditions upon which the first prize was awarded on Chrysanthemums, the plants having been brought into bloom without the aid of a greenhouse. It may therefore, be accepted as evidence of what can be accomplished with limited facilities.

I do not pretent to give anything new. The cuttings were put in early—some in February, some in March, and potted them in 4 inch pots; as soon as they required shifting they got 6 inch pots, and four weeks after they got 10 inch pots. The soil was of well rotted manure and sods. Sufficient drainage was given, this being an important point.

If large plants are required they must, from April 1st to July 1st, be pinched about twice a week to keep them bushy. The Japanese varieties are inclined to grow upright, and with these the system of management matters little.

About June 1st the pots were put outside in rows sufficiently distant from one another to allow a man to pass between, taking care not to let the plants root through the pots; to prevent which they were moved once or twice a week. I recommend training, giving each branch the support of a stake to prevent it from breaking with the wind and rains.

Chrysanthemums are vigorous feeders. I supplied them with liquid manure at least three times a week; they were also well watered, to prevent flagging. To prevent Black Fly I steeped Tobacco stems in water and syringed the plants.

The stimulant used was chiefly cow manure placed in a tub of water, and stable manure placed in a basket set in water. About the end of September I erected a house to keep the plants from freezing. I chose the south side of a fence, and placed the end of a 12-foot scantling on the top rail, the other end resting on a similar scantling in front about 3 feet from the ground, using no boards in the structure; the fence thus formed the back, and one end. After nailing bags along the front to keep out the cold, I placed hot-bed lights on the top, and put a box stove inside to heat the place when required. I continued to cut the bloom until near Christmas.

Horticulture at Canada's Exposition at Toronto.

This fair was denominated the greatest that had ever been held by the society. For the horticultural department the new and tasteful structure recently erected, although of considerable dimensions, proved quite inadequate for holding the exhibits.

The display of flowers, excepting in cut blooms, was excellent, but still hardly up to what should have been expected in a city of the wealth and size of Toronto. But as this exhibit was so far ahead of its predecessors, we hope to see improvement at future shows. Cut flowers were superb, and were a show in themselves. Foliage plants were particularly fine, especially the Begonias. Tropical plants were numerous, and included a magnificent Cactus, about eight feet high.

The fruit exhibit met all expectations and more, being, as it was, the best display by far which has yet been seen in Canada, and we might almost go so far as to say in America. These fruitgrowers, thanks to the Fruitgrowers' Association, are awakening to the importance of their calling, and seem determined to show the public what they are capable of growing. To hold the exhibit two large additional tents had to be put up, one for Apples and the other for Pears. Such perfect and fine specimens of this fruit, of nearly every variety, were delightful to see. That well-known pomologist, Dr. Beadle, who was one of the judges, gloried in his work, and proudly declared that it was one of the finest displays of Apples he had ever seen.

Pears were grand, more particularly in the large French varieties, which were equal to any we have seen. All the tables in the large tent allotted to their use were completely filled. Peaches and Plums made a most tempting display. The long wide benches devoted to this department were filled to their utmost capacity with noble specimens.

But the show of Grapes eclipsed all other departments. It was simply perfect. Nearly every variety was on exhibition. "You don't grow those out-of-doors in this country, do you?" inquired an English visitor. "But we do, though," was the rejoinder. The enquirer seemed doubtful as to whether he was being fooled, and went off remarking, "Haw! we can only do so under glass, you know."

The Floral Hall has been placed among tastefully arranged flower-beds and walks, adding much to its appearance, the whole forming a very pretty picture. The horticultural exhibit in itself was worth going a long distance to see.

State Fair Meeting of the Ohio State Horticultural Society.

After the usual custom this meeting took place on Wednesday evening of the State Fair week at Columbus. Gen. S. H. Hurst, the new president, occupied the chair and delivered an interesting inaugural address.

In his address the president alluded to the far-reaching good of the State Society to the 4,000,000 people of Ohio, remarking that the health and happiness of the people demand that their wants for horticultural products shall be met with such fullness and variety as our great army of fruit growers can supply. The improvements and additions of new varieties, especially in early and late fruits, have more than doubled the length of the season our fathers knew; there is still a wide field before us. The true road is that which blends intelligence with labor and, in a large sense, love for the work.

The present year has been one of special discouragement, excepting only a few countries in the extreme northeast where there was a partial crop, they having in part escaped the freeze which killed Apple and Peach blooms elsewhere.

Considerjng the general severe drought the State Fair exhibits are most creditable. For two years we have been looking forward to our great centennial celebration. One hundred years of labor, courage and faith, of growth, development and advancement.

Shall we not beautify that pictured monument with the golden fruitage of our orchards—the purple clusters of our vineyards—and the blossoming glory of our gardens and conservatories? Shall not this society as such prove to the people of the State that in that grand industrial jubilee no class shall lead us? Into this field you are invited. Let us plant, prune, and fertilize and train, and gather and combine, so that with the work of our hands we shall help to build that wonderful monument which shall mark the advancement of civilization during the first century of the life of our State.

After the president's remarks, a centennial committee of five was appointed, with instructions to report at the next meeting, to be held at Toledo on the 20th of December next.

Mr. Ford, of Ravenna, showed some pictures of the Crandell Currant, a black variety, and some jam from the fruit. This variety, it is believed, has some value above other Black Currants for general use.

Mr. Irons called attention to Mr. S. R. Moon's seedling Peach on exhibition. The Peach is of beautiful color, sweet, and of good quality, with yellow flesh. It was thought better and a little earlier than Crawford's Early, a hardy tree and abundant bearer.

The Witt Grape was shown for the originator by Mr. Campbell, who had visited the vine in bearing, and found it apparently a Concord white seedling of good appearance and good quality, vine healthy and hardy. This variety received the premium at the State fair as the best new seedling two years ago. The Grapes passed around for tasting seemed to meet with much approval. Mr. Albaugh said it had been stated that the Witt Grape is the Lady. Secretary Campbell stated that they are quite distinct in many respects.

A small, black, early Grape, grown from a cutting brought by Mr. Weltz from Russia, was also exhibited by Mr. J. Linxweiler. Mr. Weltz thought it of fine quality, though small; perfectly hardy. He had others from the same source, which he thought would prove valuable. Mr. Crawford presented some specimens of the new White Jessica, from Canada, which he was very favorably impressed with, finding it of fine quality, hardy, prolific and early, and about the size of the Delaware. He also presented specimens of the Potter Grape, originated at Providence, R. I., some six or eight years ago, but had not been disseminated to any extent; a hardy Grape of the Concord class, very sweet, productive, and with good foliage. Mr. Crawford had found it very good and very early.

The Bulb Gardens of Holland, by a Recent Visitor.

[From a paper by Robert T. Farquhar, of Boston, before the Gardener's and Florist's Club of his City.]

Haarlem is the center of the bulb growing district. On our way hither we noted that the soil of Holland is generally of a sandy nature, with clay subsoil.

The offices of many of the bulb dealers are in the town proper, the grounds several miles out. Many have but little ground of their own, but buy of farmers, many of whom raise far more bulbs than some dealers who issue catalogues, but from want of education or enterprise have to depend for a market on these speculators. As education has of late become more general, many new firms are in the English and American markets, offering bulbs, and prices have been lowered, very much to the annoyance of the wealthy old bulb growers. But although the profits of the old and extensive firms have been cut down, they possess the undeniable advantages of *experience*, and the land best suited for bulbs. Besides, as they grow immense quantities, and being wealthy, can wait for returns, they supply better matured and more healthy bulbs on a general order than smaller

growers, or mere speculators who advertise themselves as extensive growers.

Public auctions of bulbs take place on the grounds at the blooming season, for delivery when matured, and again at the time of lifting and cleaning. Early orders are invariably solicited from American customers, and second rate dealers are enabled to stock up at the auction sales for this trade. Many of the bulbs handled by these dealers give as good satisfaction as do those purchased from growers direct, but such is not always the case.

But even by a visit to Haarlem and a direct personal trade with the dealers one is not always sure of getting the bulbs he is shown, unless he knows his man. I know one gentleman who visiting Haarlem was invited by one dealer to ride out and see his Tulips in bloom. He went and was delighted. A day or two after another dealer invited him to visit his gardens. Fancy his astonishment when he was driven to the same Tulip grounds as he had been shown by dealer No. 1, neither of the two owning any of them, but an old Dutch gardener did, who sold to the local dealer. He, of course, understood the inwardness of all these visits.

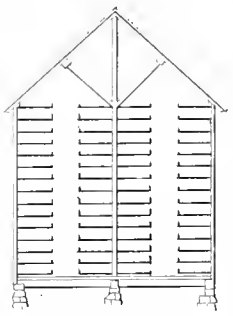


Fig. 1. Cross section of Bulb Magazine.

In visiting Holland to buy bulbs one should not tell the first grower called upon how soon you are to leave. If he wants you for a customer he is pretty sure to monopolize your time till you have no opportunity to look further. After one day spent very interestingly about his own place, his carriage will be at your hotel the next before you are up, to take you to sights which he informs you you must see, and it is so civilly and prettily done your day is captured, but in a way very pleasant for you. Nearly all the growers I met were gentlemen of wealth, refinement and education. Their residences are most substantially comfortable, their hospitality unbounded.

The Gardens. These are all very much alike. Fancy a level field, 15 to 20 acres in extent, cut up at every 200 yards or so by ditches or canals large enough to float a boat. These are met at right angles every 40 or 50 yards apart by smaller ditches, which one can step over. As there is always water in these, the fields never get very dry, but with the soil being exceedling porous and sandy, surplus moisture rapidly drains off. These canals connect with the nearest commercial system and are so arranged that manure can be carried throughout the fields, and the bulbs, etc., to the various stores or magazines in boats. The bulbs are handled in large baskets resembling our bushel baskets, but padded inside to prevent injury of the bulbs.

The surface of the bulb fields is about two feet above the water. In summer the canals are covered with the tiny green Lina natans. Carts with very broad tires are also used on the fields, light wooden bridges being provided for these, and which can be raised to allow boats to pass. At the end of the fields, close by the canal, are manure holes, into which cow or barnyard manure is dumped to rot preparatory for use.

The soil is very light, sandy, free from stones, and so fine that a great deal of the work in planting and lifting the bulbs (down some four inches) is done by hand and without tools. The soil is evidently stream deposits, and the bulb growers add very liberally leaf mold and cow dung. This kind of soil suits Hyacinths, Tulips, and Narcissus, but Hotteias or Spireas, Dielytras, Lily of the Valley, and others of that class are grown in heavier, more loamy soil, which is much darker in color than the soil for Tulips, etc.

For securing healthy bulbs the crops are alternated. Hyacinths are usually followed by Potatoes, these by Tulips, then Potatoes again, after which Hyacinths, or most frequently Narcissus or Crocus. All work is carried on systematically and very neatly. During summer and fall work is begun about five in the morning and ceases about seven at night.

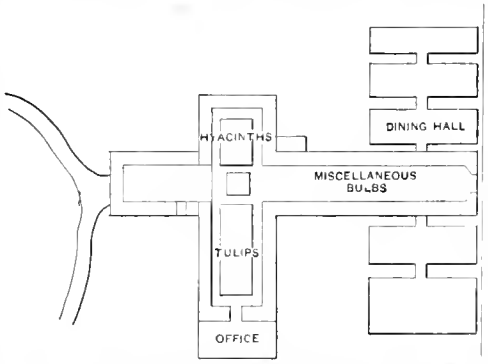
A dining hall is a feature of the magazine of about every large establishment. Here all hands repair three or four times a day to partake of coffee and other driukables, provided by the employer, and their lunch. The laborers appear happy and contented—many of them living in small cottages on the farm,—each with its neat garden adjoining.

The Magazines for storing marketable bulbs are generally erected adjoining each other and connected. I shall describe one of the best arranged magazines I visited. It was built in the form shown in figures 1 and 2. Along the passageways light rails were laid, on which hand trucks, to hold about three barrels, were driven from the boat to the various parts where they are to lie till packed for shipment. Sorted Hyacinths are all kept in one wing of the magazine, laid in regular rows one deep in the shelves (See fig. 1), which are about 7 inches apart. Tulips occupy another wing, all very carefully labelled and the varieties kept separate by movable blocks of wood. All other bulbs with dry roots are stored similarly. Each department is under the charge of one careful workman capable of filling orders.

Order filling is proceeded with in the following manner. The paper labels for bags are all written for each order soon after it is received, and are then pasted on the proper sized bags, and these for each customer are then tied together and laid aside till the time for filling. In filling a number —perhaps 12 orders—the labelled bags are distributed through the various departments, the Tulip man making up all Tulip bulbs, the Hyacinth man fills the Hyacinth part of all the orders and so on. Then each original order is taken separately, and the items as called for are handed from the trucks by the man who filled them, and when done are one by one taken away. The material used in the bags for packing is chaff of buckwheat, and sawdust by some for Crocus, to keep off a small insect which preys upon this particular bulb. Other magazines are used for storing the younger bulbs, these being usually located at a distance from each other, near the different corners of the garden, that the young bulbs can be stored near where they grew.

Propagation. It is interesting to see the various bulbs in their smaller styles and the methods of increasing them and producing variations. We shall try to describe somewhat minutely regarding one or two of the leading species.

First then to speak of the Hyacinth. The area devoted to their cultivation around Haarlem is about 200 acres. This bulb is not a native of Holland, but of the Levant, but the peculiarities of the soil and climate of Holland are more favorable to their production than any other section. The original Hyacinth (*Hyacinthus Orientalis*) is a very insignificant plant. New varieties are produced from seed. In the year 1579 we have a record of the existence of six varieties, all single. Towards the close of the 17th century double-flowered ones began to appear. In 1754 an English writer describes upwards of 50 single-flowered varieties and ninety double. About



Arrangement of Storage Magazines on Bulb Farm.

1754 we have the first records of their being grown in glasses.

In raising new varieties from the seeds of fertilized flowers, clear colors are selected for crossing. The seed is sown in August in pots sometimes, but more frequently in beds, as this promotes the growth and strength of the young plants. During winter the seed beds are protected with straw. The bulblets are lifted about midsummer and allowed to dry off with the leaves on. When quite dry they are planted in poor, sandy soil, but underneath this lean soil is put a foot of the richest material possible, consisting of fully decayed manure, river mud and sand. The Dutch growers are particular to allow no manure near the bulbs of either Hyacinths or Tulips. They rest in sand which prevents, mechanically, by its sharpness, the ready approach of worms and other insects, which attack the bulbs, and the sand also produces more shapely, cleaner, and harder skinned bulbs. Hyacinth bulbs usually bloom at four years from seed, but a five-year old bulb gives better and stronger blooms. After their season of growth and when the leaves have turned yellow the bulbs of the Hyacinth are lifted and allowed to ripen off completely in a dry place. When the leaves and roots are quite dead the bulbs are ready to clean, sort, and store.

The great bulk of the Hyacinths which are grown for sale are, however, raised from offsets. In order to obtain these in great numbers several devices are in practice. One way is to scoop out the lower part of the large bulbs, allow them to calluse over in a dry shed for a few weeks, and plant them. Next year an immense number of bulblets about the size of round peas will be found around the mother bulb. Another slower mode of multiplication is to make four incisions from the crown of the bulb to its base, cutting into the third scale of the bulb. Bulbs obtained in this latter way are less numerous, but much stronger, and are fit to sell and flower one year earlier than bulblets from the scooped out bulbs. To secure the greatest number possible of offsets the mother bulb is cut in two, dried off for three or four weeks and planted. The result next year is an extraordinary number of very small bulblets, which, by extra care and space, make large, sound bulbs in four years.

Bulb Notes. Hyacinth culture here is by no means a mere pastime. The bulbs require attention in the ground. They are subject to disease and rot. In wet seasons great care is required in getting them ripened and properly dried for shipment. The most of the bulbs leave Holland in August. They are shipped to Russia, Germany, France, America and England. In England they are much grown as window plants. One grower for Covent Garden markets sells annually about 60 thousand bulbs flowered in pots. They will be as popular here before long, as no skill is required to grow them successfully, if supplied with plenty of water and fresh cool air.

With Tulips as with Hyacinths, new varieties are raised from seed, those already in commerce from offsets. One or two flowering bulbs, besides a number of offsets, are usually found at the base of each mature bulb that has bloomed. One can almost certainly tell a blooming Tulip bulb by the stem-mark running lengthwise from base to crown.

In Holland Tulips are set out in October, and to obtain the finest flowers the natural earth is removed from the beds to the depth of 18 inches. Horse dung to the depth of six inches is first put in, then the bed is filled with a mixture of rotten dung, earth and sand, which has been turned frequently in sunny weather to kill the worms; also sifted sharp, clean sand surrounds the bulbs, which are planted about four inches deep. Before being set the scales at the foot of the bulbs are slightly raised to permit roots to escape more freely. At blooming time the flowers when open are covered from rain and the sun's heat; in this way they are made to last as long as a Carnation, and their size and color are enhanced and intensified.

The bulbs are lifted as soon as the leaves turn yellow. If allowed to stand they get soft and the skin comes off. There is no danger in lifting Tulips soon after flowering, if fairly cared for. In Holland where this is necessary they are lifted from the flowering bed, and again laid into the ground for 8 or 10 days in some out-of-the-way place where no rain or moisture can reach them. They will then be sufficiently ripened to lift, clean and to store till planting time.

A Talk on Artificial and Natural Manure.

[*Paper by Mr. Samuel Heaton read before the Prestan and Fulwood Horticultural Society, England.*]

The subject is one claiming the attention of all ranks of horticulturists—the window, cottage, amateur, and professional gardeners alike. Manure is a compound material, which when added to the soil increases its fertility, either directly or indirectly, and undergoes certain changes.

Artificial manures are the outcome of science, and although condemned by some, they are, when applied with humus (decayed organic matter), invaluable, containing in a nutshell the entire wants of plants. Natural manures are simply the residue of animal and vegetable matter.

Before knowing what to give to a plant for its growth and development, its composition should first be ascertained. He showed that three-fourths of the nourishment of a plant was absorbed by the leaves. Continuing, he examined the analysis of manures, and explained that the compositions varied greatly—so much so that they met the wants of all plants.

Alluding to soot, he said its efficiency as a manure was found in the quantity of nitrogen it contained. Blood, bones and night-soil were mentioned, and he urged that the latter should be deodorized, which could readily be done by adding charcoal, quicklime and sulphate of iron.

Natural manures are especially valuable as fertilizers; they could be utilized for the making of hot-beds, which were indispensable to successful plant culture. In small places and in dry weather they could be spread on the ground, which would prevent excess of evaporation and the ground from becoming hard, cracked, and dried up, which caused injuries to plants that could not be remedied.

In the application of manures there were two forms, namely, in a solid and a liqnid form; in the latter cultivators should be careful that they are free from fibrous matter, as these tended to clog up the pores of the soil, and thereby exclude air as well as become a nidus of animalculæ. Manure applied in a liquid form was appropriated to use at once with little or no loss; whereas in a solid form it was dependent on various subsequent agencies before being utilized by the plant; by which time some of its most valuable properties were probably lost. Land manured by a liquid retains its fertility with greater permanency than if manured with a solid, and would yield heavier and quicker crops.

Manures act for the benefit of the plants by stimulating the vital forces. A proper manure encourages root growth, and the matter absorbed is sent to all parts of the plant. Manures also act beneficially by absorbing and holding in solution matter drawn from the atmosphere and surrounding mediums. When applying it these properties should be considered as well as its fertilizing power; the greater proportion of plant food is not absorbed through the roots, but by the leaves. With regard to results from natural and artificial manures, the lecturer remarked that these were not always necessary, as the soil might contain in a suitable soluble form the necessary constituents required by the plants. Having given the results of experiments made by Messrs. Lawes & Gilbert, reference was made to the value of chemistry, by a knowledge of which they could analyze soils, manures, and plants, and could make for themselves, from the materials at hand, a compost suitable to the requirements of any plant.

Analyses showed that plants varied quite as much in their composition as manure, and it ought to be their object to have within reach a variety of substances required, for if there was a lack or deficiency of any the plant suffered; whereas, if all the substances were present, the plant could absorb sufficient for its work and leave the surplus. This statement raised the question of the selection of food by plants. He believed that they had the power to select food for themselves, but if the materials present in the soil are too strong and powerful for the life which existed at the tips of the roots, they were injurions, and entirely destroyed some plants.

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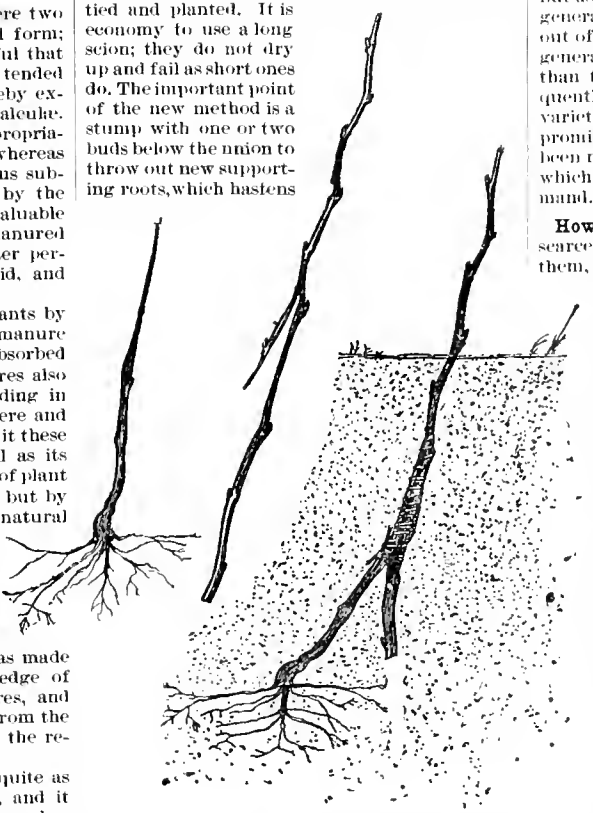
462. **Cultivating the Currant.** The best land is a rich alluvial soil, with a subsoil of clay, and not wet. One need not fear making it too rich, for the Currant is a great feeder. The ground should be deeply plowed and thoroughly pulverized. In field culture the plants need to be far enough apart to allow the use of horse and cultivator freely between them, hence to plant them 5 feet apart each way here is none to far. In the garden they may be somewhat closer, say 3 to 4 feet apart. For planting stock we care for nothing better than well-rooted plants of one year's growth, in fact, we prefer them to older ones. The old Red Dutch or Cherry Currant will give good satisfaction. Plants can be procured of nurserymen at from $2.50 to $5 a hundred, depending on quantity. After planting keep well cultivated and perfectly clean of weeds, grass, etc. Each autumn, just before winter sets in, put two large forkfuls of well rotted manure around each plant. In the third year a small crop, and in the fifth year a full crop of about 30 or 40 bushels from one thousand bushes may be expected. This fruit should never be hurried to market, as it may remain on the bushes for several weeks without injury. Early fruit, however, brings a good price. The Currant is a staple fruit, with which the market is rarely well supplied.

HELPFUL INFORMATION FROM VARIOUS SOURCES.

Grafting the Grape.—New Style. I often desire to use the wood of a new seedling immediately after its first year's fruiting. To layer is exhausting and prevents rapid multiplying of the wood. To graft upon an old stump, in this climate, where we have to lay down for winter protection, is uncertain. So I utilize strong two or three-year vines off the same or kindred species for stocks. A study of the three cuts herewith given illustrates the best plan of grafting. That to the left is the disbudded stock, fourteen to eighteen inches long. The next to it shows the prepared scion, ready for slipping over the stock. The one to the right is the stock and scion tied and planted. It is economy to use a long scion; they do not dry up and fail as short ones do. The important point of the new method is a stump with one or two buds below the union to throw out new supporting roots, which hastens



IMPROVED STYLE OF GRAFTING THE GRAPE.

the union. In the old way many scions fail to unite with the stock, while with this plan no more die than of ordinary vines set out, but they are a little later to start. This is a saddle graft, modified with a half-severed stump below. The stock should be disbudded, to lose its individuality and throw its energies into the bud scion. The scion and stock should be of the same size and the cuts upon the stock should be upon each side, from about the center of an internode, through a bud, to the same point of the internode above the bud. And the cut upon the scion should begin and end at about the same points, splitting the wood in the center, bud and all, so that the points where the buds are in both come exactly together, thus having the points containing the most protoplasm come together, forming a more rapid union. The manner of tying is shown in the cut, and the way of placing in the soil. By thoroughly firming the soil (for this I use the spade handle) at the butt of the scion and to a couple of inches above the cut, finishing with a mulch of fine loose soil or other material, the air is excluded effectually.—D. S. Marvin, in American Garden.

Planting Tree Seeds. Acorns, Chestnuts, and Walnuts may be planted in Autumn, or kept during winter in moist sand or moss and planted in spring. Ash, Hard Maple, Box Alder, Black Cherry, etc., are better kept in moist sand during winter and sown in early spring. Catalpa, Birch and Ailanthus are kept dry in winter and sown in spring. Hard shelled seed, like the Locust, should be soaked in hot water before sowing in spring. Soft Maple and Elm should be sown as soon as ripe in May or early June. All the above, except Catalpa, Ailanthus and Locust, are better sown early, or as soon as the ground is in condition in spring. Sow evergreen seeds broadcast in beds four feet wide, in light sandy loam; cover very lightly. Shade the beds from the sun 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 nursery.—Douglas and Sons' Catalogue.

Propagating Strawberries. A prominent Western nurseryman has advanced the theory that plants from the runners of an inferior plant will produce inferior fruit, regardless of the variety. To this he attributes the failure of many new varieties to meet expectations. He says: "My investigations have taught me that there is a great variation in different runners of the same plant. In some there is decided improvement, and these are the ones we want to breed from; but as a general thing there is a tendency to degeneration, as many fine fruits which have gone out of cultivation attest. Plants which have degenerated in quality of fruit propagate faster than those of the higher qualities, and consequently one can observe how it is that a new variety may be ruined by sending out the roots promiscuously. For the last four years I have been marking, selecting, and throwing out plants which did not come up to the standard I demand."—Prairie Farmer.

How to Keep Cut Flowers. When they are scarce one is more likely to take more care of them, but changing the water and putting a little ammonia in it will not do everything. It is the night-light that withers them the most quickly; many sorts will keep for a week if placed at night in a bowl in a cool place and covered with a cloth. In the morning return to vases of cold water. Tropæolums will live and bloom for a month if a long spray be broken off and placed in plenty of water. If placed in a long bottle behind a picture this plant blooms very effectively in water. Snowdrops and Daffodils picked in the bud will keep in water for three weeks. Many wild flowers are more enduring if cut in the bud. I often keep Roses for a week by gathering the buds when the first leaf is beginning to uncurl, placing them in cold water in a dark cellar, with moss over the stalks. Almost any flowers will retain their beauty in a dark cellar, kept in ice-water and moss.—English Farm and Home.

Open Air Gardening The benefits of open air exercise and diversion are not known as they should be. Full draughts of fresh air and extra physical exertion give zest to everything and anywhere. Only contrast the jollity and good humor of newsboys, out in all weathers, with the grumpy, fidgety, cross looks and tones of the pale children of over-indulgent parents. The remedy for the latter: plain food and more outdoor exercise; fresh air is plenty all around. The woods can be brought to the door by planting. In the garden all manner of nooks may be created among trees, bushes, vines, and blossoming plants. Few occupations will beget more immediate interest than gardening. Even mishaps and failures help the interest. No other work offers so many enticements. The digging over should not be done by proxy; it yields complete and thorough exercise. What costs work we enjoy. How much better tastes the fruit that we raised. What beauties in every leaf and shoot trained by our own hands, while we pass by with but a glance the products of the hired gardener. Few realize the solid advantages to a family to be derived from cultivating a garden. Besides being a physical and moral help, it adds to the abundance of one's table, both when it is most needed and in its freshest and most palatable condition. A well cultivated garden is the very best annex any home can have. It enlarges the household life and happiness, promoting larger joys for old and young alike, and within its limited enclosure are to be found such innocent and lasting delights as the world beyond is wholly unable to bestow. —Massachusetts Plowman.

The Use of Lime. Large quantities of nitrogen are contained in the earth and air, and clover absorbs and fixes this substance more than any other plant. When given a chance it works to

furnish in abundant supply and most available form this essential element of food for farm crops. By applying lime the growth and thrift of clover is increased, and thus the growth and productiveness of all other crops is greatly improved; the lime indirectly is of great value, not exactly as a manure, but as a factor in producing fertility. East of the Alleghanies the application of lime for agricultural purposes is much more general than west of the mountains. The method is to apply 30 to 40 bushels of unslacked lime per acre. Some put it on the ground after it is plowed and before planting. The better way is to apply on the young grass in the wheat stubbles, and thus allow it to assist the young clover and thus start the process of fertilizing the land by means of this deep-rooted nitrogen absorber. The application of lime will assist the growth of clover; a good crop of the latter will afford much of the best forage, and at the same time store up food in the soil for succeeding crops.—Stockman and Farmer.

Squashes and Watermelons in Winter.—For winter use select large, late varieties of Melons, and do not pick them until the frost is about to set in, and then about a week before fully ripe, as they will then, if properly stored, ripen in about three or four weeks, after which they will retain their delicious, juicy flavor for a considerable length of time. They are best stored and preserved by being packed in any fine, dry substance, such as bran, sawdust, chaff, oats, etc. in a large rough box, then be placed in any cool, dry, airy place, such as the cellar or woodshed, being cautious that they escape the frost. Squashes may be kept even until late in the spring. They should be carefully gathered, and no bruised or defective ones be selected. They are kept best in the cellar, and they should not be packed in heaps, but placed on shelves, and if one row is placed so as to press upon another, the fewer such rows the better. The Squash is a highly nutritious vegetable, and should not be missing on the table for at least half the year.—Farmer's Advocate.

No Fruit Trees for Shade. Fruit trees in the front yard are objectionable, as the fruit dropping attracts flies, is unsightly, and in the way of the lawn mower. They are not permanent, as the life of even Apple trees in modern times is often less than a score of years, and of most other fruits still shorter. Land is never so valuable that we must make the dooryard narrow or utilize it for fruit trees. The planting of shade trees around the home should be done once for a lifetime. Plant the Elm, with its graceful contour and spreading branches; the Hard Maple, for its symmetry, its dense and brilliant autumn foliage, and the Gray Ash, with its compact form and subdued autumnal colors, and you may reasonably expect your children's children to sit under the shade of these trees. During twenty-four years more than 200 fruit trees out of a total of 400 on my farm have died after coming into full bearing, but the Elms, Maples and Ash, of which I planted twenty, are still in their youth, and will be when I am gone. Some of these trees spread more than fifty feet. Plant fruit trees in an orchard not less than 100 feet from the house, but for shade and permanency plant the varieties named, and if your grounds are large enough add Oaks, Walnuts, Catalpas, or any of the forest trees indigenous to the locality. The greatest attraction of my farm is an imitation forest 100 feet south of my house and containing less than one-fourth acre, in which I have growing some thirty trees of ten varieties, under whose shade we have transplanted some fifty varieties of wild flowers of the neighboring woods.—W. F. Brown in Tribune.

Plants in Rooms. Health in a great measure depends upon clean foliage. In a glass-house there is never much dust, whereas in a living room there is always a great deal, and this suffices to choke every pore of the leaves. Every plant here should therefore get a tepid bath twice a week, washing both the upper and under side of the leaves, or, if the foliage is much divided, it should be syringed. It is wonderful the difference in the appearance of plants which get this loving attention, and such as lack it. I feel sure that in the growing season a thorough cleansing will often benefit a plant more than several doses of liquid manure. Plants in rooms have to struggle against many adverse influences, and need close attention both as to cleanliness and watering. Water so that the soil does not become close and sour; if the roots can be kept active, the top will not be likely to go wrong. During winter the soil should nearly dry out before water is given. If pans are used, keep empty now. Windows that project from the building are the best, and in such plants may be grown with success; indeed, many do almost or quite as well in them as under a glass roof. An east aspect is the best for most things, getting the early beams of the sun and escaping its fiercest rays. Some fine-leaved plants can be kept in the dwelling the year through without injury, but the great majority must have the free open air during the warmest months of the year. Geraniums turning yellow, Fuchsia buds dropping, and other evils complained of so frequently, are caused by want of "tone," brought on by the enervating influence of a too confined and vitiated atmosphere. In dwelling rooms the ventilation is regulated by the needs of the inhabitants; in others the plants can be made the primary consideration.—Gardening Illustrated.

THE CULINARY DEPARTMENT.

Quince Preserves.—Pare and core the fruit; boil in clear water until tender; make a syrup with a pound of sugar for each pound of fruit and boil the Quinces slowly half an hour.

A Peach Betty.—Remove the skin of the Peaches. Put them whole, with layers of breadcrumbs and sugar, in a baking tin; brown the top serve with a sweet or sharp hot butter sauce.

Sweet Pickle Apples. With one teacup vinegar and two of sugar make a syrup, adding cinnamon and cloves. Pare and core sweet Apples, drop them in the syrup and let them cook until tender, not soft. Put in a jar and pour the syrup over them. They are ready to eat as soon as cold, and will keep any length of time.

Oysters in Bacon. Procure as many slices of fat bacon—as thin as a wafer—as there are oysters; roll each oyster in a piece of bacon, fasten the ends with a skewer in such a way that the skewer can be easily removed, put the rolls into a tin, and bake in a gentle oven; when the bacon is cooked, the dish is ready.

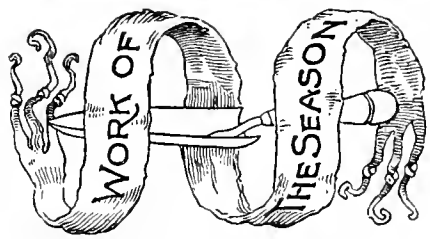
Vegetable Soup. Boil a soup bone until done, add to the broth boiling water to make the amount of soup wanted, and when boiling again add a half pint of Corn, a handful of Cabbage cut fine, a half pint of Tomatoes, a few Potatoes, and a few small Onions, if liked. Let boil half an hour, then stir in an egg with a spoonful of milk, pepper and salt.—Pittsburgh Dispatch.

Grape Jelly.—The Grapes should be put into a preserving-pan with just enough water to prevent their burning; when hot rub them through a fine sieve to get out the seeds and skins; weigh the pulp, and to each pound put three-fourths of a pound of pounded sugar; boil three-quarters of an hour. This is a good way of utilizing Grapes, which do not ripen well.—Rural Canadian.

Pumpkin Pie.—The Pumpkin should be fine-grained and have a deep rich color. If Squash is used in place of Pumpkin the pies will have a much richer flavor than if made out of the vegetable by whose name they are called. Peel and cut the Squash or Pumpkin into long strips, and steam until tender; then put through a fine sieve. For each pie allow one egg, half a cupful of Squash, one cupful of boiling milk, two teaspoonfuls each of nutmeg and cinnamon. Beat together the Squash, sugar, egg and spice; then pour on the boiling milk, stirring all the time.

Pickled Cabbage.—Cut up in shreds as many red Cabbages as you intend pickling, and place on large dishes and sprinkle common salt over; next day turn over, and the next also, so that all may be salted. Then lay the Cabbage on a sieve to drain off the superfluous wet, and pack in a stone or glass jar until nearly full. Boil some pieces of ginger, long black pepper, a few cloves and allspice, in best brown vinegar, and when boiled up, pour over the Cabbage, filling up each jar full. Leave till cold, and then tie down. The vinegar must always cover the Cabbage up to the top. It is ready for use in about a fortnight.—C. M. D.

To Cook Vegetable Oysters.—After careful cleaning and cutting, it is put in water with a small portion of milk or flour stirred in—this will prevent it from turning black. After it has been washed in this water it is placed on the stove with boiling water; salt according to taste, and boil until tender. Then take equal quantities of butter and flour, which are melted together in an earthen crock. When well heated first pour on a little of the water in which the oyster plant has been boiled, adding the rest and vegetable afterward. Let boil a few minutes. When ready to serve, stir in the yolk of an egg which has been thoroughly whipped, with a little milk or cream.



PREPARED FROM DIARY NOTES BY CHAS. E. PARNELL, QUEENS, N. Y.

HOUSE PLANTS.

Agapanthus umbellatus may now be placed in a cool, light cellar. Keep as dry as possible without permitting the leaves to shrivel for want of water.

Begonias. The Rex varieties now in comparative rest should have less moisture. For the tuberous section, see Plant Culture Under Glass.

Cactus. Keep dry now; then they will do well in almost any light situation of 45 degrees.

Callas to be liberally watered now. When the pots become full of roots give liquid manure twice a week.

Cestrums. After bloom treat as for Hydrangeas. Trim into shape before placing them to rest.

Cineraria Maritima. Nip the leading shoots at times to induce bushiness of the growth.

Chinese Primulas to be carefully watered at the roots, not touching the foliage, as this will often cause them to rot off at the surface.

Cyperus alternifolius to be well supplied with water. Give liquid manure occasionally.

Freesia refractra for early blooming may be started. As growth advances increase the water at their roots.

Fuchsias. The summer blooming varieties to be placed in a cool, light cellar, and kept rather dry. The winter bloomers to have liquid manure occasionally.

General. Keep a sharp eye for insect pests, especially the red spider. Sponge off the leaves of all plants occasionally. Water thoroughly whenever it becomes necessary to do so.

Geraniums, (Zonal). Winter blooming plants in good growth to be given liquid manure occasionally. Those taken up outside and potted to be kept cool and rather dry. Pot any cuttings as soon as rooted and place in a light situation.

Hydrangeas to go into a cool, light cellar, keeping them rather dry at the roots.

Jasminum Grandiflorum. A dose of manure water suits them occasionally. Keep free from red spider.

Jerusalem Cherries. Water freely to keep the berries. Liquid manure occasionally also helps. Plants that have been plunged during the summer can be wintered in a cool, light cellar, like Hydrangeas.

Justicia carnea showing bloom enjoy richness of soil, hence liquid manure at times. Otherwise keep rather dry, in order to avoid too rapid growth.

Lemon Verbenas. Treat as directed for Hydrangeas.

Lemon and Orange Trees. Water less freely. Sponge off the leaves and stems occasionally.

Manrandyas require attention as to training. Give liquid manure twice a week from now on.

Ivy. Keep down scale. Sponge off the leaves.

Myrtus Communis. Keep in a light, sunny situation. Don't over-pot or over-water.

Oxalis. As growth advances increase the supply of moisture. Expose as fully to the sun as possible if bloom is desired.

Passiflora cœrulea can be treated as Hydrangeas.

Pomegranates. Treat as directed for Hydrangeas.

LAWN AND FLOWER GARDEN.

Box Edging can be taken up, divided and replanted at any time before the ground becomes frozen. Set as deep as possible, and firm the earth well around them.

Bulbs may be planted until the ground becomes frozen, but the earlier the better. Those planted late should be mulched before the ground freezes.

Evergreen shrubs in exposed places may be protected somewhat by placing evergreen boughs around them, especially on the south and west sides. Secure by placing the butt ends in the earth, and fastening the tops together with stout twine. This is to be done just before the ground becomes frozen.

Flower beds to be dug over as deep as possible, and a good supply of well decayed manure mixed in.

Hardy herbaceous plants to be securely labelled so that there will be no danger of their being destroyed when the border is dug over next spring. Just before the ground freezes mulch well, or else cover over with evergreen boughs to prevent injury by alternate freezing and thawing.

Lawn Mowers to be taken apart, thoroughly cleaned, and put in order for winter storing.

Lawns to be given a heavy dressing of bone dust or well decayed manure as soon as mowing ceases Irregularities to be evened, slight ones with the roller and by sprinkling on soil, others by removing the sod, filling with good earth, and replacing the sod.

Leaves. Gather frequently and store for use in mulching, protection, compost, etc.

Mirabilis roots to be taken up and stored in sand in a dry, frost-proof cellar for another season's use.

Pansies. Young seedlings for next season to be covered with evergreen boughs, or lightly with straw, after the ground becomes frozen, to prevent injury by repeated freezing and thawing.

Rhododendrons and Ghent Azaleas not long planted to be well mulched with coarse litter or half rotten leaf mold, and otherwise treated as advised for Evergreen shrubs.

Roses in the open to be treated like Rhododendroos.

Shrubs in borders to be mulched with coarse manure; this to be dug under in the spring.

Stakes, Plant Supports, etc. to be gathered together and placed under cover for another season's use.

Trenching, draining, making walks, grading lawns, and all similar improvements to be pushed forward and completed, if possible, so as to avoid delaying important spring work.

Vases, Hanging Baskets, to be emptied, cleaned, repainted if necessary, and placed under cover.

PLANT CULTURE UNDER GLASS.

Acacias. See that they are thoroughly watered from now on. If the pots or tubs are well filled with roots, liquid manure should be freely given.

Achimenes will now be at rest. Place the pots in a dry situation with an average temperature of 50 degs.

Amaryllis. The deciduous species to be kept dry. The evergreen species to be given only water enough to keep the leaves from shrivelling.

Astilbe Japonica for early blooming to be started.

Azaleas for late blooming to be kept in a cool part of the house. At rest they do not require frequent waterings. Neither should they get very dry. Young plants and those that are required for early blooming to be placed in the warmest part of the house.

Begonias. (See House Plants.) The tuberous rooted varieties to be treated as advised for Achimenes.

Bonvardias blooming freely may be given liquid manure occasionally. Guard against insects, and aim for an average temperature of 55°. Watered carefully and in regular heat, these plants are easily grown.

Caladiums. Treat as advised for Achimenes.

Calceolarias. Treat as suggested for Cinerarias.

Camellias from now on to be syringed occasionally, and moderately supplied with water at the roots. Be sure to keep the foliage thoroughly washed.

Carnations to be moderately watered and syringed occasionally on bright, sunny mornings. Stake and tie up as required. Air freely on suitable occasions.

Cinerarias for early flowering to be shifted into larger pots. Keep in a cool, light, airy place.

Crassula lactea from now on to be fully exposed to the sun, and kept rather dry, to induce free flowering.

Cyclamens to be kept in an average temperature of 50 degrees, and as close to the glass as possible. Blooming plants to be given liquid manure occasionally. Seedling plants to be potted off into small pots, or else shifted on, if sown early.

Dalechampia Rozeliana. The flowers will be materially improved in size and color by keeping in a sunny situation, and giving liquid manure occasionally.

Deutzia gracilis for early blooming to be started into growth by placing in gentle heat.

Epiphyllum truncatum, and its varieties, to be started into bloom by placing the plants in a light, sunny situation, and increasing the heat and moisture.

Euphorbia Jacquiniiflora to be placed in a warm moist atmosphere, and close to the glass.

Ferns to be repotted whenever necessary. Keep well supplied with water. Guard from all insects, especially scale. Keep Gymnogrammas well supplied with water, and in a warm, moist, shady situation. Avoid wetting them overhead if possible.

Gardenias. For early blooming keep in a temperature of from 55 to 60 degrees. For later use, keep cool. Water all with moderation. Sponge off the leaves.

Gesnerias of the Zebrina type, growing in warm houses will now be in full beauty, and should be liberally watered, but avoid wetting the foliage.

Gloxinias. Treat as for Achimenes.

Habrothamnus in a sunny situation will flower freely, and may be given liquid manure occasionally.

Heaths. Water carefully, and keep in cool, airy place.

Heliotropes blooming freely to be given liquid manure water occasionally.

Hyacinths and other Dutch bulbs that were potted early and well rooted may be gradually started up.

Lily of the Valley for early blooming to be brought in for forcing about the end of the month.

Mignonette in pots not to be over-watered. Keep as close to the glass as possible.

Orchids.—*Cypripedium insigne* in cool houses will not require much water, but don't allow them to become very dry. Towards the end of the month remove them to where they can be given more heat. *Dendrobiums* will by this time have completed their growth and should be placed in a sunny situation. Keep rather dry, but don't allow them to shrivel, or else the flowers will be small. *Oncidium Ernithorhyncum* will flower during the month, and they will soon fade unless the plants are placed in a shady situation. *Zygopetalon crinitum.* Water at the roots as required. It will bloom during the present month, and if the plant is given a cool, dry situation, they will remain a long time in perfection.

Pansies. Those being forced to be as close to the glass as possible, and air freely on every possible opportunity. Stir the ground between the plants often.

Pelargoniums. Those that were cut down some time ago to be repotted. Place them in as small pots as possible. Young plants to be shifted as necessary.

Poinsettias. Treat as for Euphorbias. Give liquid manure two or three times a week, and maintain an average temperature of 60 degrees.

Tabernemontanas to be placed in a warm, moist, sunny situation, and in an average temperature of 60 degrees whenever flowers are desired.

Verbenas. Rooted cuttings to be potted off. As growth commences pinch out the tips of the shoots.

Vincas. The seed of rosea, alba, and oculata for next season's use should be sown as soon as gathered.

Violets. Treat as for Pansies, keeping down all runners and dead leaves also. Towards the end of the month those in frames will require to be protected at night by means of straw mats or shutters.

FRUIT GARDEN AND ORCHARD.

Blackberries. If not yet done, trim out the old wood. If the plants show lack of vigor, spread manure among them; this to be dug in in the spring.

Cuttings of Currants, Gooseberries and Quinces put in last month to be covered with evergreen boughs as soon as the ground freezes to prevent their being displaced by alternate thawing and freezing.

Currants and Gooseberries showing lack of vigor will be materially benefited by spreading manure around them, and digging it in early in the spring.

Grape Vines can be pruned as soon as the leaves fall. Protect wherever required by laying down and covering with three or four inches of earth.

Grafts may be cut towards the end of the month. Tie in bunches, label, pack in sawdust and store in a cool cellar until wanted for use.

Marketing. The fruit to be carefully assorted and packed. Apples in clean barrels. Pears in boxes, with each specimen wrapped in paper. Ship only first-class fruit, placing your address on each package.

Raspberries. Treat as for Blackberries. The tender sorts to be covered, as advised for Grape-vines, before the ground freezes.

Rubbish, such as prunings, leaves, and litter, should not be long permitted to remain around, as this furnishes homes for many insect pests, as well as a harbor for mice to make trouble for young trees.

Stocks for root grafting should be lifted before the ground becomes frozen, and stored in cold frames.

Strawberries. Mulch with straw or salt hay as soon as the ground becomes frozen. To prevent the straw from being blown away lay poles, or throw shovels of dirt on between the rows.

VEGETABLE GARDEN.

Artichokes. Jerusalem to be lifted and stored as Potatoes. Green Globe to be covered with litter or salt hay just as soon as the ground freezes.

Cabbage. When growth ceases, pull and store. Select a dry, sheltered spot, place the Cabbages together in rows, heads down, as close together as possible, and cover with four inches of earth. Don't cover until cold weather is at hand. A supply for immediate use may be preserved by placing the heads in a barrel and covering with sphagnum. Put in a cool, dry place.

Carrots. Gather, cut off the leaves to within half an inch, and store the same as Potatoes.

Celery. Keep earthed up as long as growing weather remains, but before hard frosts set in it should be taken up and stored as close together as possible in narrow trenches, ten inches wide, and of a depth suitable to the height of the plants. Cover with shutters so placed as to shed rain, and on the approach of colder weather cover with straw, this to be gradually increased as the season advances. When wanted for use, take out a quantity and pack in a box, with alternate layers of Sphagnum and place in cool cellar.

General. As soon as a crop has been gathered, let the ground be deeply plowed. If at all possible, let a Miner Subsoil Plow follow in the wake of the common plow; this will drain, lift and break, but not turn up the subsoil, and the advantage derived by this will be apparent next season. Bean Poles to be cleared of the vines and placed under cover.

Leeks. Take up and store in cold frames, by laying in the plants in an upright position. Air freely, so as to keep them as cool as possible. Protect in severe weather by mats, straw, or shutters. Or take up and store in sand in a cool cellar.

Onions. Keep in an airy situation, and quite cool.

Parsnips to be lifted for early winter use, placed in pits, and covered as advised for Cabbage. For late winter and spring, leave in the ground until wanted.

Rhubarb to be given a heavy dressing of manure, this to be worked in around the plants in spring.

Salsify and Scorzonera. Treat as for Parsnips.

Sea Kale. Cover about the end of the month with five or six inches of coarse, littery manure.

Spinach for early spring use to be lightly covered with straw or salt hay.

Squash and Pumpkin. Keep in as dry and cool a situation as possible, but guard against frost.

Tools. Clean and oil thoroughly and place away for another season's use. Repair and repaint all that require it, at the earliest opportunity.

Turnips should be gathered on the approach of severe weather, stored in pits and gradually covered to the depth of five or six inches. For immediate use store in barrels in a cool cellar.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus roots to be lifted and stored in cold frames, where they can be got at when wanted.

Figs in boxes or tubs to be stored in a cool, dry cellar before freezing weather sets in. Those to be forced in the warm grapery may now be brought in.

Grapery. Keep the late houses as dry and cool as possible; air freely. Remove all decaying berries. The successional houses to be pruned as soon as the leaves fall, canes cleaned off and laid down. Clean, repair, and repaint all woodwork. In very early houses the vines may now be started into growth. Increase the heat very gradually. Mulch the borders well with coarse littery manure before cold weather sets in, in order to keep them from freezing.

Lettuce may yet be procured from cold frames. These should be well aired, and well protected from frost by means of mats, shutters, etc. For later use the growing plants should be given an average temperature of 55 degrees. Air freely on all favorable occasions. Plants in cold frames to be wintered over should not be protected except in severe storms. Scatter tobacco stems around and among the plants to keep the green fly in subjection.

Pine Apple in fruit to be given a warm, moist atmosphere. Young plants to be given a moderately dry atmosphere, from 55 to 60 degrees of heat.

Rhubarb. Treat as directed for Asparagus.

Strawberries in pots to be plunged in cold frames before freezing weather sets in. Water sparingly.

POINTS ABOUT POULTRY.

In Poultry matters many mistakes are committed by having more than one variety of fowls. We refer now especially to beginners and to those who engage in the work as a side interest.

Old Newspapers pasted on the walls of the poultry house, suggests the Mirror and Farmer, make an excellent lining for the inside. Put them on with ordinary flour paste, and when the paper is dry give it a coating of thick whitewash. When the weather becomes warm next season remove the paper, as lice may find snug places for concealment.

A Good Point. When you desire to do all in your power to induce laying, remember that hens lay—*naturally.* All that can be done to help them do this is to supply the proper materials out of which eggs and their shells may be created, and stimulate the process perhaps by extra care, better quarters, and an increase of first-class feed in variety. They must have good shelter. They should be fed with sound grains, animal food, cooked vegetables, and green provender regularly. Gravel, lime, bone, shells and such substances should be provided, so that they can eat as much as they need of either, at their leisure. Clean nests, dry dusting-boxes, clear, fresh water, and occasionally butchers' scraps or cooked offal is what they crave. These all assist them toward increasing the egg-meat within them and bringing it to maturity. Thus the eggs are made and laid, as a matter of course.—Poultry Journal.

November is a good month for making sales, finishing up the culling process and final preparations for winter. It is one thing to raise good pullets through the summer and fall, but if we neglect them just now and not provide comfortable quarters, grain, animal and vegetable food for their use by and by, we are not doing our duty. When the time comes to house poultry and expect from our early pullets eggs when they are valuable we may be disappointed by neglecting their little wants now when most needed. Everything out-of-doors now wears a scared look. The fowls, accustomed to roam to pick the tender grass and catch the moving insect, now mainly depend on the hand of the feeder. This is the time to provide a stock of Cabbage, Turnips, Potatoes and Onions for winter use as they can be had cheaper now. To some it may appear unnecessary to store green food for fowls, but think of four or five months in confinement without their accustomed tid-bits. And put your fowl houses in proper shape. Gather the dry fallen leaves and put them away in a dry corner for winter use when the fowls need exercise by scratching for kernels. See to the drainage of your houses and yards, and avoid dampness lest cold and roup visit your flock. Above all look to the cleanliness of the fowls and henneries, for uncleanliness is the bane of the poultry house and the greatest enemy the fowls and keepers have to contend against. Enter an uncleanly and illy-ventilated hen house before the fowls are off the roosts, and the offensive air will convince you that it is no place for any breathing animal to live in.—Poultry Monitor.

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following. Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

471. **Moles in Orchard.** Please advise as to best way of destroying in young orchard.—J. F., *Oil City, Pa.*

472. **Hot-bed in October.** I have a large hot-bed now ready for planting, but have no idea what can now be put into it.—Mrs. E. N., *Glenville, N. Y.*

473. **Foreign Grape Culture.** Which are the best foreign varieties for cold grapery? Do you know of any work on the management of same?—W. S. R., *Hackettstown, N. J.*

474. **Northern-exposed Greenhouse.** I built a small lean-to in rather a strange place, namely, on the north side of a neighbor's greenhouse wall built to the line. The flue of his house gives partial warmth to mine. Should you think any further heating would be necessary, or would not an oil stove in cold weather do? What plants should I rely on?—E. E. L., *Trenton, N. J.*

475. **Dividing Tree Pæonies.** Can these be divided at the root, and if so when should it be done?—Mrs. G. G., *St. Louis, Mo.*

476. **Cuttings of Lapageria Rosea.** Will any one be kind enough to inform me how to strike a Lapageria rosea cutting? What soil should I use, and what temperature should be kept up?—J. H. C.

477. **Salt and Fresh Water Influences on Fruit.** If agreeable I would like the opinion of men of experience as to the relative effects of large bodies of salt or fresh water on fruit growing.—J. TAILBY, *Onandaga Co., N. Y.*

478. **Keeping Vegetables.** I have seen little on this subject in your columns, and as I have raised some very good ones and am a new beginner, I would appreciate advice on wintering a family supply.—M. E. L., *Bristol Co., R. I.*

479. **Apples for the South.** A list of the best kinds in your columns would oblige.—A. L., *Beaufort Co., S. C.*

480. **Root Pruning Fruit Trees.** Is this advisable, and what is the object? If it is a good plan I want to know.—ORCHARDIST, *Stafford Co., N. H.*

481. **Wax Plant Management.** I have not had the success with this plant I desire. Any information as to management will be thankfully received.—MAUD.

482. **Oranges not Setting.** My tree in the greenhouse blossoms abundantly but does not fruit. Can you ascribe a cause?—Miss E. L., *Warren Co., Pa.*

483. **Rooting Le Conte Pears.** Please tell how to root Le Conte Pear cuttings?—G. M. H., *Henrico, Va.*

484. **Caring for and Planting Bulbs.** Should be glad to know about taking up and wintering Gladiolus, Dahlias, Caladiums and Oxalis; also, when to put in Tulip bulbs for next season's blooming?—SUBSCRIBER.

485. **Onion Planting in the Fall.** Will it do to plant Onion sets (Globe Dauvers) in the fall? If so, when? Also, Potato Onions, best time to plant?—E. M. Y., *Paducah, Ky.*

486. **Greenhouse in Small Town.** I should like opinions as to whether a greenhouse can be made to pay in a small town remote from the larger cities? If so, what line affords the best chance for success.—F. W. C., *Bradford Co., Pa.*

487. **Propagating Grapes Out-of-Doors.** Which is best:—1st. To plant the cuttings in the fall where they are to grow? Or, 2d. To keep them over winter in dry sand in a cool cellar? Or, 3d. To bury them outdoors where water will not lie on them during winter?—M. L. S., *Pittsburgh, Pa.*

488. **Evergreen Hedge in Shade.** I am desirous to ascertain the best kind of hedge to plant where it is exposed to the drip of trees. I should prefer an evergreen.—C. C., *Washtenaw Co., Mich.*

489. **Weigelia Rosea for Hedge.** Has the Weigelia rosea been tried? and, if so, how far apart should the plants be set?—C. C., *Washtenaw Co., Mich.*

490. **Sawdust Manure for Mushrooms.** Will some one with experience tell whether manure with sawdust bedding from well-fed horses will answer for Mushrooms?—INEXPERIENCE, *Valparaiso, Indiana.*

491. **Tuberous Begonia Culture.** How should these be cared for from this time on.—J. E. G., *Cook Co., Ill.*

492. **Pests on the Mushroom Bed.** I am having excellent results from a Mushroom bed, excepting that I am annoyed by mice eating them, and they become soiled by flies. Could some one give me a remedy against these and other pests to this plant.—G. W., *Monroe Co., N. Y.*

493. **Chrysanthemum Leaves Failing.** Some of my plants grown in pots outdoors until a month ago, when I put them under glass, now show some lower leaves affected with what I think may be mildew, and the leaves seem to die off. Will any one tell me the best treatment and preventive?—L. E. C.

494. **The Cuba Lily.** Will you please tell how to treat the Cuba Lily.—Mrs. L. A., *Goderich, Ont.*

495. **Transplanting Young Walnuts.** Three years ago I planted twelve shag bark Walnuts, from which I raised nine trees, and these I now want to transplant. When is the best time? Ought the roots to be pruned?—Mrs. J. D. E., *Hartford, Conn.*

496. **Peaches from Seed.** Do you use the stone and kernel intact, or the kernel alone? Is autumn or spring the best time to plant? How deep to be planted?—I. R. W., *Montgomery Co., Pa.*

497. **Russian Mulberry Query.** A lot of trees here are in a row and from two to four feet high. How would you plant them out? How thick, and when is the best time?—E. R., *Ida Co., Iowa.*

498. **Market Gardening Questions.** Which are the best Beets of good size for market; also, the best Sugar Beet grown; also, the best Sugar Corn for market and home use, and which is the best combined cultivator and drill for garden use?—A. P. D., *Brighton, Colo.*

499. **Grapes in Florida.** Will Northern 2 year-old Grape-vines do as well in Florida as state-grown vines? Also, what varieties will do best in Florida for the market, all things considered?—S. G. G., *West Union, Ia.*

500. **Round Pint Basket.** Where can be found a plain, round pint berry box?—M. S. B., *Crete, Neb.*

501. **Cedar from Seed.** How shall I proceed to propagate from the seed? How overcome the guminess formed on the seed that is not soluble in water or the soil?—A. TAFT, *Goodrich, Kansas.*

502. **Black Spots on Rose Leaves.** My Roses get black spots on the leaves and eventually drop off; ground quite rich and they have previously grown thriftily. What is the cause and remedy?

503. **Liquid Manure Making, etc.** Is fresh or old manure best for liquid manure? How will the effects of too much or too strong liquid manure be shown on Roses?—YOUNG FLORIST.

504. **Mildew and Aphis on Roses.** What is the best treatment for mildew and green aphis on out-door Roses?—M., *McHenry Co., Ill.*

505. **Cape Bulb Culture.** I will be much obliged for a brief note as to culture of Ixias, Sparaxis, Allium and Freesias for winter blooming; also, as to an Ornithogalum for winter.—J. A. H., *Venango Co., Pa.*

506. **Everbearing Strawberry.** An agent has been offering such a one, praising it highly; do you know of any such.—READER.

507. **Harris' Lily Query.** Should Harris' Lilies that have been in ten inch pots and bloomed last May and have not yet shown signs rest be dried off and kept dry all winter, or rest awhile and then started? I only want them to ornament my porches in spring.—J. D.

REPLIES TO INQUIRIES.

457. **Green-fly in the Rose House.** Suppose you try spreading a layer of Tobacco stems two inches deep and ten inches wide the full length of the greenhouse, and give them a dash of water when watering. The slight fumes constantly arising from the Tobacco will keep the green-fly entirely in subjection.

466. **Manuring Rhododendrons.** If the bed is properly made Rhododendrons or Azaleas will not need manuring, and if the soil is not suitable no manure will give them vigor. The best plan is to give a top-dressing of leaves of any deciduous tree (those of Oak being usually preferred) in the autumn; and, in early spring fork these in, if it can be done without disturbing the roots; or, better still, throw a light sprinkling of loam over them to prevent them from blowing away. The leaves will soon decompose and be all the manure the plants will need. In a bed properly prepared with loam, leaf-mold and sand, the plants thrive for many years without any renewal of soil; and, unless one is willing to prepare a proper bed, it is better not to attempt to grow them, for they never give satisfaction in common soil.—A. H. E.

465. **Pruning Dwarf Pears.** We have for some years practiced pruning in our dwarf Pear trees about the last of October, or as soon as the foliage has dropped. It is asserted by some that, during winter, there is danger of injury to the terminal bud where such cuts are made; but we have never found any such result. We have, however, lost many a growth from the last bud, when we have cut in a tree in spring; and generally because of the bud being full at the time, and the fresh cut opening an exhaustive receiver, as it were, in the air, thus drying out and destroying it. The cut made in the fall, as early as possible, but after active vigor has left the bud, leaves time for the wood to dry and harden preparatory to the spring pushing. Another reason for fall-pruning is that there is generally more time at command, and the work will be performed with greater care and judgment.

468. **Protecting Shrubs, etc.** Plants near the ground may be covered with leaves or hay; but shrubs and climbing vines will need different management. When evergreen boughs can be had without much trouble they may be used to good advantage. This work should, if possible, be done before the ground freezes, so that the ends of the boughs may be stuck into the ground to keep them in place during the winter; when this cannot be done, they will need to be tied together to keep them. Some who cannot readily get such boughs may get straw more easily, and it can be used to equal advantage. Bind and tie it around the plant in such a way as to protect it both from the extreme cold by night and the heat of the sun by day. It is not generally the extreme cold that kills the tender or half-hardy tree or plant, but the alternations of heat and cold. Then, when so protected, the plants are less liable to be broken down by sleet, snow and ice, which often greatly injure them.

438. **Moon Vine or Evening Glory.** For keeping over winter, root slips and keep in house until mild spring weather appears.—J. T. WALLACE.

426. **Hardy Catalpas for Timber.** I have quite a number of hardy Catalpas set around the north and west side of my orchard as a winter protection, and find them well adapted to the purpose. They make a strong, rapid growth. They are perfectly hardy here.—N. J. S., *Eldon, Mo.*

460. **Vinegar Eels and Mother.** The little wriggling creatures in some vinegars have been credited with being the life of the vinegar; their presence is in no way beneficial. These develop in most fruits, and find their way into vinegar made from fruit juices. Vinegar which contains them must contain some mucilaginous or albuminous matter, or the eels would have no food, and could not exist. They need air, also. They may be killed by heating the vinegar to 128 degrees Fahr., or by adding boracic acid. The tough, leathery substance, commonly called "mother," is one of the many fungi whose spores float in the air, settle as dust on exposed objects, and fall into exposed liquids, ready to grow into a bulky plant when conditions favor. The exact position of the vinegar plant among fungi has not been settled. The plant develops while the vinegar is making; and its presence is a sign that the operation is hastening. It grows on the surface of the vinegar, and if not disturbed will cover the whole surface, conforming to the shape of the vessel. Manufacturers of vinegar get rid of the mother as soon as possible. The popular notion that the presence of mother shows that the vinegar is of good quality is not well founded. The vinegar plant appears in vinegar made of molasses, and it is really as undesirable as mold on bread.—Writer for Popular Science Monthly.

442. **Warts on Vine Leaves.** The small excrescences are not caused by insects, but by slight exudations of sap. When the warts are so numerous as to give the leaves an enerusted appearance respiration is impaired and healthy growth arrested. If the leaves are not seriously ruptured do not apprehend the vine will be materially injured. The affection often follows a great outrush of air by throwing the ventilators open widely after a house has been closed too long, and the air becomes too warm and moist, the transpiration or evaporation from the leaves being then too sudden and excessive. Admit air early by the top ventilators, increasing it gradually as the heat of the house increases, but never to cause a sudden fall in temperature.

453. **Home Grown Tobacco for Fumigation.** I prefer this to any other. My way of using is to take an old iron pan the size of a dish pan, make a hole in the bottom as large as an egg, put in a handful of shavings, fill with the Tobacco which should be quite damp, set over a couple of 6 inch pots to give draught and set fire. This amount to 1,000 feet of glass is about right for Roses, Carnations, etc. Heliotropes are apt to be injured when so much is used.—W. F. L.

464. **Failure with Lilies.** Too much stress cannot be laid upon the importance of winter protection. Some, the Tenuifolium for example, although natives of as cold countries as Siberia, and would naturally be considered perfectly hardy in this climate, very often fail, to the surprise of the planter. This is due to the fact that in their native home the first approach of winter is heralded by a heavy snow-storm which covers the ground several feet deep and remains until spring, thus protecting them from destructive freezing and thawing spells. The ground should be underdrained.—W. F. L.

474. **Northern Exposed Greenhouse.** Being the house is already in part provided with heat, the addition of an oil-stove might be sufficient to keep out severe frosts in such a small house. It would not receive any sun-heat during the winter months, and will not be well adapted to grow ordinary greenhouse plants. Camellias will do well in such a house, and Ferns, Fuschsias, Pelargoniums, Chinese Primroses, Paris Daisies, etc., would do fairly well. Bulbs of various kinds will develop their beauties in such a house about as well as any; so also will the pretty Lily of the Valley.

475. **Dividing Tree Pæonies.** Do not attempt to divide Tree Pæonies even if they are large plants; there is a risk attending it, and they are such slow-growing plants, even when kindly treated, that any serious disturbance at the roots would interfere with their growth for two or three years. Surely it is a mistake to wish to do so, for we have never known them to get too large, and a large specimen is such a glorious sight when in flower that we should prefer not to interfere with it in any way.

424. **Killing Sprouts.** I have always had the best success by making it a rule as far as possible to cut in August, not during any particular time of the moon, but during the last days of this month.—N. J. SHEPHERD, *Eldon, Mo.*

490. **Sawdust Manure for Mushrooms.** Sawdust manure from well-fed horses has been used in Mushroom culture, and so have tree-leaves, but these substances have only been used when stable manure could not be had. The sawdust should be from hard wood, not deal, and it will be better if a proportion of stable or straw manure can be mixed with the sawdust. Of course, the droppings from the animals will be in the sawdust. Rather less drying and turning will be required than with ordinary manure.—A. H. E.

456. **Effect of Leaf Fall on Fruit.** If the leaves of your Pear trees have fallen after the fruit has become two-thirds grown it is likely that they will mature, although they will be wanting in flavor. If the fruit has not attained two-thirds of its growth it will prove to be worthless.—CHAS. E. PARNELL.

443. **Renovating Old Vines.** Unless the vines have made a strong growth this season it is of little use to attempt to renovate them, and I think that your best course will be to remove them and plant anew in the spring. If the old vines have been improperly cared for and are making strong growth they can be considerably benefited by giving a good dressing of well decayed manure this fall and working it well in around the roots in the spring. In the spring also prune and strip off all loose bark. Tie up before the buds begin to swell.—C. E. P.

444. **Cypripedium insigne.** This can be grown in a warm, moist situation, where a temperature of 55 to 60 degrees can be maintained. The plants should be fully exposed to the light. During the plant's season of growth they should be given a liberal supply of water at their roots, and as they require but little rest it will not do to allow them to become too dry. They should be grown in porous or soft baked pots, and these should be well drained. If the pots are two-thirds filled with drainage it is none too much. In placing drainage in the pots, place the larger pieces in first, gradually filling up with smaller and finishing with a layer of moss. They do best in a compost composed of two parts rough fibrous peat, one part of sphagnum moss, and one part sharp sand, all well chopped up and mixed. In potting keep the plants well elevated and in the center of the pot. Pot firm; keep the plant when in bloom in a cool airy situation, and the flowers will remain in perfection for a long time.—C. E. P.

454. **Pear Tree Scale.** Dissolve two pounds of potash in two gallons of water, and apply to all the stems, branches and trunk of the tree by means of a paint brush. One or two applications will destroy all. This can be applied at any time when the foliage is off the trees.—C. E. P.

507. **Harris Lily Query.** Harris Lily is an evergreen or rather continuous-growing form of the Trumpet Lily (*L. longiflorum*), but submits to the same sort of treatment that we accord to the Trumpet Lily, namely, to be rested in fall or winter and started into growth in spring. Yes, lay the pots on their sides in the cellar so that the bulbs may have a good long rest, but observe that the earth in the pots does not get hard frozen nor dust dry. Start them in spring according to the time when you wish them to bloom, allowing, under favorable circumstances, some ten weeks from the time the young shoots appear till blooming time. If you started them now they would take longer to come into bloom. As out-of-door Lilies I never have found any difference between the Harris and the common Trumpet Lily as regards hardiness; none of the race is extra hardy, but with a good mulching over their roots they should survive pretty hard winters. But as they have a tendency to produce bulbs all along their stems underground, you had better lift and replant all your Trumpet Lilies every two or three years in order to keep the bulbs away from near the surface of the ground, hence beyond the injurious influences of frost.—W. FALCONER.

493. **Chrysanthemum Leaves Failing.** The Chrysanthemums were put into the house too early. The first week in October, as a rule, is quite soon enough, and the following directions should have been observed in housing them:—1st. The house should have been thoroughly cleansed of all dirt, leaves etc., that may have accumulated during the summer, and if not painted, a very good plan to adopt is to well wash all glass and woodwork with some cleansing substance. 2d. The plants should not be housed on a wet day, or when the foliage is wet with rain or dew. If you do you are sure to have mildew appear. 3d. If mildew does appear, slightly dust with flowers of sulphur. I should therefore advise L. E. C. to pull off a few of the lower leaves from his plants, then slightly dust them with flowers of sulphur. If the house is heated with pipes, a very little of the flowers of sulphur can be put on the pipes and a fire lighted, and every light thrown open at the same time; this will soon dry up all dampness.—A. H. E.

478. **Keeping Vegetables.** Those intended for table use through the winter should be so cared for that they will not shrivel, but retain even freshness. Turnips, Beets, Carrots, Parsnips, and the like, may be covered with sand and kept fresh. Many vegetables are nearly ruined by being stored in cellars heated by a furnace. This should never be allowed. It is better never to store such things in a cellar under a house, but in a cool place, either under the barn, or elsewhere convenient to the house. The cooler they are kept, the better, if they do not freeze.

447. **Troublesome Grass in Lawn.** Early in spring rake and roll thoroughly, then apply a heavy dressing of Henderson's lawn fertilizer. Avoid short cutting; mow frequently but allow the grass to remain as long as possible. A dressing of well decayed stable manure could be applied this fall with benefit.—C. E. PARNELL.

491. **Tuberous Begonia Culture.** The culture of Tuberous Begonias does not present any difficulty to any one having a fair knowledge of ordinary plants. Their season is now over. During winter the tubers may be stored under the stage of the greenhouse. Lay the pots on their sides to prevent drip from above saturating the soil. During the early spring months they ought to be watered, and as soon as it is seen that some growth has been made, shake out the tubers and pot them in any good soil, such as is frequently recommended for Pelargoniums, Chinese Primulas, Cinerarias, etc.,—good loam four or five parts, decayed stable-manure one part, leaf-mold one part, and some rough sand added to it. A celebrated Begonia grower showed me the potting-soil his firm use for their prize Begonias some time since, and it was very similar material to that which I have described. Do not give the plants very much water in the early stages of their growth, but as the pots become filled with roots they require a liberal supply. Place the plants near the glass where they have a free admission of air without being exposed to cold draughts. They are really indoor plants, requiring corresponding treatment, but they may be started in a forcing house early in the year to give early bloom.—A. H. H.

506. **Everbearing Strawberry.** We know of no "Everbearing" Strawberry that yields even a fair second crop, and that agent is a fraud. Let him alone.—A. M. P.

427. **Keeping Grape Seed, etc.** (*a*) Put Grape seed in dry sand till ready to sow. (*b*) We prefer planting Raspberries in fall and banking over them with earth, and drawing this away in early spring by running over with harrow.—A. M. P.

481. **Wax Plant Management.** The Wax Flower (*Hoya carnosa*) requires plenty of heat and moisture during the flowering season, but in winter should be kept cool and with only moisture enough to preserve its thick fleshy leaves in a fresh state. It will not stand frost, but need not have a winter heat higher than 45 degrees at night, or from 50 to 60 in daytime. It is subject to mealy bug and aphis, and when they appear they should be washed off with warm soap-suds and a brush, drenching the plant afterwards with clear water. In summer this plant delights in the strongest heat, and plenty of sunshine. Treated thus the second season it will give bloom, and annually. It is usually trained to a trellis, though we have seen most handsome plants tied to a stake and massed back and forth thereon and tied together. There are several species, one with variegated leaves, but the deep green variety is undoubtedly the best.—A. H. E.

484. **Caring for and Planting Bulbs.** The bulbs and tubers you name should be taken up after the first keen frost, and after having the top removed dry them thoroughly in the shade. Gladiolus and Oxalis should then be stored in paper bags in a dry place where no frost comes. Dahlias may be better kept in a cold cellar suited to keeping Potatoes. Caladium and Canna roots do best for being stored in dry sand in any cool place where it does not freeze. Concerning the planting of Tulips, etc., see article in September issue.—A. H. E.

501. **Cedar from Seed.** The Red Cedar (*Juniperus Canadensis*), to which we think you refer, can be propagated from seed, but the hard and bony shell of which you speak must be softened by some chemical application, or the seed will seldom germinate until the second year, even when exposed to frost or kept constantly moist. A. S. Fuller in his new work on propagation has this to say of treating them: "The usual method is to gather the seed in the fall when fully ripe, and either mix with strong, moist wood ashes, or pour some strong potash water over them, leaving them to soak and soften two or three days; then rub the berries, using a little sharp sand, until the outer coat is removed. Wash out the sand and shells, and sow immediately in a bed in the open air, covering about half an inch deep. Mulch for the winter with light material, and this should be removed in the following spring. If then the plants appear, protect them from the direct rays of the sun, but if they fail to come up return the mulch and wait another year. Most of the Junipers, including the Red Cedar, may be propagated by cuttings of the young shoots planted in sand under glass, or of mature wood taken off in the fall and set in cold frames, to be slightly protected in winter.

473. **Foreign Grape Culture.** The following on this subject is from a former article that appeared in this journal: The best of all cold-house Grapes for common culture is the famous Black Hamburg variety. It has large shouldered or branching bunches and large, sweet, rich berries. Where twenty vines are to be set, at least a dozen should be of this sort. Of other fine varieties for the amateur we recommend the following: *Black* or *purple*—Lady Downes, Muscat Hamburg, Trentham Black; *red*—Grizzly Frontignan, Red Chasselas; *white*—Bowood Muscat, Early Auvergne, Frontignan, Golden Hamburg, Royal Muscadine or Chasselas de Fontainbleau, White Frontignan. The only work on this subject which we find advertised is Chorlton's Grape-growers' Guide, and with this we have no acquaintance. It can be ordered through this office at its advertised price of seventy-five cents.

480. **Root-Pruning Fruit Trees.** This is an operation which is sometimes advisable, with the view of making barren trees fruitful; but it applies only to trees that do not fruit well in consequence of their luxuriant growth and not to trees unfruitful from starvation. Many expedients have been adopted to cause young trees to fruit earlier, the most common being to graft them upon weaker-growing stocks. The Pear grafted on the Quince is a familiar illustration; by this means growth is checked and flowering hastened. Fruit trees in soil which has been highly enriched, such as in a vegetable garden or rich old meadow, will often grow to large size, and yet not produce fruit. When in this condition anything that will check their growth without injuring them otherwise will throw them into flower and fruit, and proper root-pruning will effect this. The most favorable time is about October. By digging out a trench encircling the tree at a distance four feet from the stem of a tree, say twenty feet in height, with proportionate spread of branches, and cutting through at least all the strongest roots, it will check the wood growth, and cause many fruit buds to be formed.—A. H. E.

477. **Salt and Fresh Water Influences on Fruit.** This matter recently came up before a meeting of fruit growers in Boston, Massachusetts, where the following views were advanced: In regard to the salt water being a cause of splendid fruit, one speaker had seen as handsome fruit as ever grew from a tree in Michigan, very near fresh water. He did think once that salt water was the cause of such good fruit in eastern Massachusetts, and perhaps it is so. On the shores of Lake Michigan he had found the fruit handsome and splendid to eat. Pears grew within two or three miles of the lake at Grand River and Kalamazoo. So it was not salt water that helped them, but it may have been water. They would not grow four or five miles from the water of the lake. The trees split up after they have grown a little while, and it is very cold away from the water. The handsomest Peach orchard he ever saw in his life was on the shores of Lake Michigan in the vicinity of Grand Haven. They were like weeds, and instead of looking scabby they were smooth way up high for eight or ten feet. Another member said he easily understood why the air is not cold near the ocean. Where he lived, close to the shore, it is not as cold as it is five miles inland by five degrees. The ocean is always open and is never below the freezing point. But I do not understand why it is not as cold on the shores of Lake Michigan as it is a few miles inland, when it is all frozen over.

487. **Propagating Grapes, Shrubs, etc., Out-of-Doors.** The whole subject of outdoor propagation by cuttings is so well covered in a recent article by Prof. J. L. Budd in the Farmers' Review that we quote it here nearly in full: We will note briefly the management of the mature cuttings of the young wood of a few trees, shrubs and vines, including the Currant, Gooseberry, Willow, most of the Poplars, Mock Orange, Tree Honeysuckle, some of the Spiræas, and Elderberry. These may be prepared and planted as soon as the leaves are mature. Make the cuttings about eight inches in length, cutting quite close to a bud at the lower end, but an inch or so above the bud at the top, stick in rows in well prepared ground, with the top bud about even with, or slightly below the earth surface. Prior to the advent of cold weather, cover with hay, straw or leaves, to prevent injury from freezing and heaving. In the spring clean off the mulching and rake the line before the buds start. The young wood of the Grape, Mulberry, Wild Olive, Buffalo Berry, Box Alder, Populus bolleana, Populus alba, Populus argentea, Smoke Tree, Weigelia, Spiræa nobleana, Spiræa Douglasi, Spiræa opqulifolea, tamarixamurensis, etc., is prepared for rooting by placing in the calusing pit late in autumn. Prepare as above noted and tie with willows into bundles of from 50 to 75, the buts evened. Make a pit on dry ground, 11 inches deep, into which place the bundles closely together with the bases upward, and evened up by crowding earth under the shorter bundles. Cover with four inches of mellow earth, and over all forest leaves or fine straw, to mainly keep out frost. In the spring, clear off the mulch and rake the surface of the remaining earth. If rains be not frequent water liberally. Continue this until the base of the cuttings show callus and commence to root. Then carry to the field in water. Stick in mellow subsoiled rows at an angle of about 45 degrees. The secret of success is in planting when the roots begin to push. If any roots break off the callused base will emit others before the top buds start.

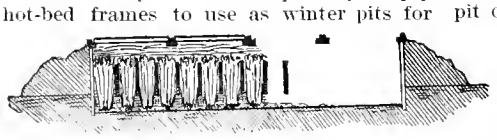
505. **Cape Bulb Culture.** For pot culture the bulbs of these, in common with all bulbous plants which flower in the spring, should become well established aforetime through early potting. The proper treatment is to shake out all the old soil in September, and put about eight good bulbs in a 5-inch pot, giving good drainage, and using good free sandy soil. Pot firmly, and water sufficiently to moisten the compost through. Then if you have no frame, stand the pots in some sheltered place, putting a piece of tile or something over the pot to keep the soil from being drenched with rain, at the same time not allowing it to become quite dry. About the middle of November put them in the window of a room where fire is seldom made, as they cannot bear warmth, and it does not matter about frost getting at them, they being quite hardy. Air them freely, especially in spring, never in any way coddling them, and they will make strong growth and bloom well. We find Freesias do well in a compost of good fibrous loam, peat and leaf-mold, in about equal proportions, enriched with a little dry cow manure,

and a liberal addition of silver sand to keep the whole porous. The soil should be used somewhat coarse, and the bulbs should only be potted when at rest, the roots of these plants being so very delicate that it is impossible to re-pot them after root action has commenced without a great deal of injury to the plants. Freesias require very little water in the early stages of their growth, but the supply should be increased to keep pace with the strength of the plants. A light sunny spot in a frame or a greenhouse is a suitable position for them through the winter. Ornithogalum umbellatum is a hardy garden plant that will succeed under the most common conditions of culture. Of the section usually grown under glass the bulbs ought to be treated in general as directed above; if they are not kept dry from June until September they will not flower freely.

Hot-bed Frames for Storing Celery.

CHARLES SEWALL, WASHINGTON CO., VT.

For several years I have put my empty hot-bed frames to use as winter pits for



How Mr. Sewall packs Celery in his Hot-bed Frame.

storing Celery and some other vegetables, with satisfactory results. No preparation is needed beyond a lot of additional boards ten or twelve inches wide, sawed to a length equal with the inside width of the frame.

To fill a frame I first clear out the old manure and soil, making provision that several inches of soil remains spread over the bottom. Then at nine inches from one end I place one of the prepared boards to extend across the bed, and parallel with the end. This board is kept some four or six inches up from the bottom of the bed. It is held in place either by some cleats, or by towing nails through its ends into the sides of the frames. Narrow boards set along the sides of the frame for the ends of the cross boards to set upon I find a great convenience in keeping the cross ones in place.

In filling, I proceed by setting Celery plants compactly together in the nine inch space between the first cross board and the end, for its length across the bed. At the same time I settle the roots into the earth in the bottom of the bed. The first space filled I form another by setting up cross board, number two, at nine inches from the first; and fill out between with Celery, as done in the first instance. This course is pursued until the frame is full. I should have added that if the soil in the bottom of the bed is not decidedly moist, I thoroughly sprinkle each line across the bed, from underneath the cross board only, before placing in another line.

My Celery is not thus pitted until freezing weather is at hand, usually in the latter part of November. I cover it at once with a light coat of straw applied directly on the tops, and put broad shutters the size of a sash on at first in place of the regular sash. This suffices as a cover until winter sets in in good earnest, when the entire space up to the sash bars is filled with straw. At the same time both the sash and the shutters on top are put into position, there to remain until the Celery is wanted. I should add that the frame outside should be well banked with soil to its top all around.

The obvious advantage of such a method of caring for Celery, is that it is easily gotten at as wanted for use or market, even in midwinter. This cannot so well be said of Celery stored in ordinary trenches. In taking out, one course at a time, or less, can be removed, without interfering in the least with the remaining courses.

I have tried the same plan, with certain slight variations, in keeping other vegetables, such as Cabbage, Parsnips, Turnips, etc., in winter, with good results. For Celery, however, it stands unequaled. Most other vegetables can be well preserved in a regular root cellar, but this is not the case with Celery. I think I can always detect when the latter has come from a cellar. It lacks crispness, and often has a somewhat moldy, or "cellar taste," that is not pleasant.

An Economical Forcing Pit.

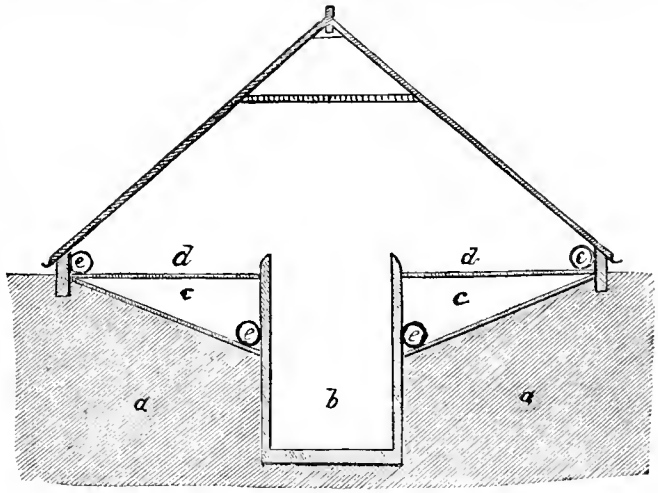
The engraving on this page shows one of the most simple and economical forcing frames that can be constructed. It is economical with respect to material and workmanship required in its erection as well as in the important matter of heating. Being built with the gutters at less than one foot from the ground, exposure to cold winds is reduced to a minimum.

To provide the necessary walk (*b*) in a pit of this character the only course is to sink it by proper excavation into the ordinary soil (*a a*). But this is no disadvantage provided the soil where the pit is located be perfectly underdrained, so that no water can stand in the excavation. In the instance illustrated the pit was designed for propagating purposes, the beds being brought almost on a line with the surface of the land outside, hence near the glass. But for other purposes where more room would be required between the bench and the glass the former could be made somewhat lower than is here shown. In the present case hot water pipes (*c c c c*) are shown located for providing both bottom heat (in the enclosed portions *c c*) and top heat.

In the construction of a pit of this style, while the sides that support the rafters as well as the walk linings may be more economically built of wood, so far as first cost is concerned, still in the long run brick, or in the case of the side walls, stone, being imperishable, would be found the cheapest. We suppose it is generally understood that two or more pits built side by side are in a measure more easily heated than if they stood separated. Still the gain in that respect is less clearly defined in proportion as the side walls are lower, hence the present case would not be very marked.

A Fine Fruit Farm.

Some time since a representative of this journal visited the fruit farm of Mr. M. T. Thompson at E. Rockford, Ohio five miles from Cleveland. On account of a severe drought, things were not looking as well as otherwise they doubtless would have, judging from the culture and attention given. Considering this fact and also that four years ago a large part of the farm was covered with a forest, which had to be cleared, it was plain that Mr. Thompson is a man who has the push and enterprise to make this one of the best fruit farms in the State of Ohio.



CROSS SECTION OF ECONOMICAL FORCING FRAME

There are about sixty acres in the place, of which some twenty-eight acres are in Strawberries for next season's fruiting, fourteen of old and the same of newly set plants. Wilson, Mt. Vernon and Haverland's Seedling being the favorite varieties, though nearly all sorts are being fruited, the balance of the farm being largely in Raspberries, but with ample plats of Grapes, Gooseberries, Currants, Pears etc.

Of the Blackcaps, the Gregg has been very unsatisfactory, as, while the bushes were well set with fruit, owing to the dry season, the bushes and the fruit were entirely dried up, not a bushel of fruit being gathered from a three-acre plat. Under the same conditions, however, the Doolittle, yielded a good crop of fine fruit. This experience with the Gregg was found to be altogether common among the fruit men of this section.

Of the Reds, Cuthbert, Philadelphia, Brandywine and Hansell are grown mostly. In spite of the dryness, fine fruit of Brandywine and Philadelphia was marketed July 30, the latter being a favorite for home use, though from its dark color not so marketable, which objection is also urged against Shaffer's Colossal while admitting its superior flavor, productiveness, etc.

A very early Red, over which Mr. Thompson is particularly enthusiastic and of which he is planting the largest area of any early variety, is a seedling of his own and which he has named Early Prolific. From this during the past season he picked ripe fruit June 19. From the appearance of plants set the past spring quite a crop was gathered, while the new growth, from plants growing on loose gravelly soil, exposed to the full effects of drought, appeared bright and vigorous, presenting a marked contrast to the Hansell alongside, the latter being mildewed and burned.

Mr. Thompson firmly believes in thorough culture and heavy manuring, his place showing in every part that the theory is put in practice, being especially noticeable in the present unfavorable season. His plan of repetitional cropping from the same land the same season was described in the September issue of this journal.

FOR STORING CABBAGE an Illinois grower selects a piece of ground quite dry, and at the same time mellow and easy to trench with spade or plow. In this he makes a trench of sufficient width and depth to receive the heads so they will not touch either bottom or sides of the trench. He then takes a piece of two by four inch scantling and places it edgewise over the trench in such a way that the heads suspended from it, roots up, will not touch either sides or bottom. Then, after stripping off the coarse, outside leaves, the heads are secured to the scantling by a nail through the stump, the roots coming up a trifle higher than the natural earth. Then some pieces of board, just long enough to make a sort of rafter reaching from the edge of the bank to the scantling, to give it a slight pitch, are put down on these rafters, other boards are placed lengthwise, and a sufficient quantity of straw, or other coarse material, is scattered on them to prevent the earth falling through, a quantity of which, to prevent much freezing, should be placed on top, and this will keep the heads cool and sufficiently moist. Placing the heads in position should be delayed as long as weather will permit. The trenches may be in sections ten or twelve feet long in order that in opening the air need not come to all at once.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. DECEMBER, 1887. No. 3.

Announced by all the trumpets of the sky,
Arrives the snow, and, driving o'er the fields,
Seems nowhere to alight. . . The housemates sit
Around the radiant fire-place, enclosed
In a tumultous privacy of storm.—*Emerson.*

POTTED BUSHES of any of the spring-flowering shrubs force readily to bloom in the winter.

TO REMOVE the old wood from the Raspberries when the ground is frozen, a good way is to give a quick jerk which will usually break them off at the top of the ground.

THE LATE EXHIBITION of Apples and Pears at Edinburgh, Scotland, appears to have been one of great interest. Scotland contributed 8,000 dishes, of which 1,000 were Pears. England sent 4,000 dishes of Apples and Pears. Ireland contributed 569, and Nova Scotia a magnificent collection of Apples.

THE CAPACITY of any Lettuce forcing space can nearly be doubled by a proper use of small pots for bringing on an extra lot of plants. How this may be done is as follows: About two weeks after the space is planted to the first crop in the fall, enough plants to refill the space should be potted into 2¼ inch pots and be grown on in these. They may stand pretty well crowded, thus occupying but little space, right up to the time of removing the first planting, when the pot plants should take their place in the benches, refilling the pots again from young plants, the seed of which was sown about the time of the previous planting. The method may be kept up throughout the winter. Each fresh planting of the bed should be preceded by a dressing of guano or other fine manure over the soil.

A CO-OPERATIVE movement has recently been established which gives promise of effecting some improvements greatly needed by the people who reside especially outside of the large towns. It is called the United States Postal Improvement Association. Its more direct objects are to secure reduced postage on seeds, plants, etc., the reissue of fractional currency for use in the mails, the abolition of postal notes, the issue of money orders under $5 for three cents, and the repeal of the law against printed addresses on wrappers. The president is W. P. Nixon of the Chicago Inter Ocean. Among the vice presidents are F. G. Pratt, one of the publishers of the Youth's Companion; Mortimer Whitehead, lecturer of the National Grange; C. W. Macune of Texas, president of the Farmers' Alliance; and E. G. Hill of Indiana, president of the Society of American Florists. The treasurer is James Vick, the well known seedsman of Rochester, N. Y. We would be glad to see the reforms referred to effected, and shall hold our columns open for giving whatever assistance we can to the work taken in hand.

Cheaper Horticultural Postage; A Great Opportunity.

The third annual report of Postmaster-General Vilas is at the date of this writing nearly ready for publication. It will contain among other things the novel intelligence that for the first time in the history of the country the postal service is self-sustaining.

Such a showing is the more gratifying in view of the fact that within the past three years the change of the unit of weight on letters and other first-class matter from a half ounce to an ounce went into effect, and also a reduction in rates on second-class matter. What stronger evidence could be wanted to show that cheap postage is a great success in this country. It has lead to such an increase in the postal business that whereas under the former higher rates, even as recently as 1885, the department showed a deficiency as high as $7,000,000 per annum, now with the substitution of cheaper postage no deficiency appears.

The present time therefore is incomparably favorable for gaining the long sought end of a decided reduction in postal rates on horticultural matter. We trust that the committees of both the American Seedsmen's Association and the American Nurserymen's Association, appointed for the purpose of bringing the matter before the coming Congress, will make the best of their opportunity. At the time of their appointment this last solid argument in favor of general reductions had not yet manifested itself; now that it is a verity, it must be used to its utmost worth.

Nor should that other strong argument, namely, the benefits to the people at large by reduced postage on horticultural matter be under-estimated. An improved horticulture, such as must follow on the wider dissemination of seeds, roots, cuttings, scions, etc., attending a material reduction of postal rates, would prove to be one of the greatest boons conferred on the American people. It would mean pleasanter homes for the average residents of the town and country as improved by the setting out in greatly increased numbers the then cheaper plants and trees for use, for beauty and for shade. It would mean more and better fruit and vegetables as a diet for the masses, not only in the country, but in every town and city as well. A reduction of one-half on postal rates on such matter would be equal to an increase by millions every year in the planting of young trees, vines and shrubs throughout the length and breadth of our country, adding to the forest as well as the ornamental features of the land, and through both shedding a benign influence on the comfort, health and happiness of the people.

Not only must a reduction be sought for in the matter of postage on horticultural products, but a change for the lower should be asked on the rate of transmitting money by the postal service. Now it costs an extra fee of ten cents to have a letter registered; this should be reduced by at least one half. Even at that the rate would be no lower than the Canadian Government has granted to her people for some time past. It should be possible in the face of the present favorable state of our postal affairs to do at least as well and really much better than our enterprising neighbor has done.

Horticultural Notes by Judge Samuel Miller, of Bluffton, Mo.

NEW GRAPES. Among the new varieties I notice one important one not often enough mentioned. Moore's Diamond has fruited with me three years, and is so superior to any other white Grape we have that such others are left in the shade in point of quality. While the Niagara, Pocklington and Empire State are fully what is claimed for them, the Diamond is equal to any of them in size of bunch and nearly so in berry; the vine of the hardiest kind, vigorous and healthy, very productive, and in quality 40 per cent better than either. It is the coming light Grape, or is rather here to stay.

KEEPING FRUIT TO THE SECOND YEAR. I send you an Apple of 1886 which has been in an open box in my celler that has been kept by a simple inexpensive process. They were sent to me, near two months ago, and since out of their proper element seem to keep about as well as mine here of 1887. I believe in the thing, and if we can keep Apples, Pears and Grapes over the year without ice, it will be a good thing. A good cave or cellar is necessary, the rest is simple, easy and not much expense. It is not patented, but all who procure a right are bound by a bond of secrecy.

CLEARING LAND FOR FRUIT RAISING. It is a common practice in most places to cut down the large trees, leaving the stumps stand, and burning the leaves. This is not the proper plan however, and will not hold out in the way of convenience and utility afterwards. No leaves should be burned, but they should be carefully saved and ploughed under. But all the brush and small chips, as well as the stumps should be burnt and the ashes evenly spread over the ground. To burn the leaves much of the fertilizing material goes off in smoke, while if covered with soil it is all retained. Here when we clear new land the common price is $30 per acre, and 25 cents for each additional tree a foot or more in diameter at the base. But then the trees are all grubbed out by the roots to a depth of 18 or 20 inches; then plowed and subsoiled to that depth. Some will say that this would make expensive land, but let me give an instance of the result of such work.

A PROFITABLE VINEYARD ON NEW LAND. A friend of mine near Hermann, Mo., was clearing a three-acre piece, when I asked him what he intended planting on it? He said Martha Grape-vines, and said I should visit the place in a few years. In their fourth year I did visit that Martha vineyard, in the beginning of September, and I never in my fifty year's observations saw anything like it.

The vines had made a good growth and had an enormous crop of splendid bunches as clean and bright as a new pin. Now said the owner, who was in great glee, come and I will show you my patch of Martha cuttings taken from these same vines. He had some fifteen or twenty thousand I supposed, which at that time sold for $1 per root. Turning to me, he remarked: "You raised that Grape. Mr. Miller, but I will make more money out of it than you will." He told the truth then. Three months after that on meeting him again I asked him what he made out of the Grapes. He said $1,500, and that he sold the young plants for $1,500 more. Here was $3,000 from three acres in one year, prepared as above stated. This shows what can be done when the proper preparations are made. I have known vineyards here prepared in the same way that have born good crops (not excepted) for twelve years, without a handful of any kind of fertilizer, except the leaves of the vines and the cuttings cut fine and plowed in.

CROPS IN VINEYARDS AND ORCHARDS. It is a common thing to cultivate crops in a

young vineyard the first year. Potatoes is the usual one, and it is a bad practice, for we know that the Potato takes potash in its food largely, which the vines need. I grow nothing in a young orchard or vineyard (except something new) unless I have the means to return in the way of manure to make up for the tax on the soil. Many a young orchard has been ruined before it got a start in life, and many more go down when they should be in the prime of life just for the want of proper food and cultivation. Quite recently I saw a Winesap tree with the finest Apples of its kind I ever met with, where the roots run under a hog pen. They were nearly black, and I have a specimen of them now that measures nearly twelve inches in circumference.

A Cutting Pot well arranged.

Treating a Cutting to Harden it.

Several Points in Plant Propagation.

A common trouble met in the rooting of slips is that of damping off or else the rotting away of the part beneath the surface of the sand in which they are set. The cause for this is not difficult to understand, as we consider that usually the most suitable part of a plant for slipping is the young tender ends of the growing shoots. These being of a succulent, comparatively watery nature, to place them into sand that is rather damp is quite like inviting decay, unless the conditions for inducing rooting and growth are in other respects decidedly favorable.

To overcome the tendency to decay alluded to, the method of pot propagation shown on this page is of advantage. It is not a new method, but has long been in use by florists. It should find more general use with amateurs, and especially in rooting the more succulent kinds of cuttings, such as tricolored or any Geraniums, Fuchsias, etc., throughout the winter season.

The main idea is the use of a small inner pot in the center of a large pot, and to cause a narrow ring of sand between the two, in which to insert the cuttings. The water can be applied to the sand through the inner pot, thus preventing washing and packing on the surface. By providing drainage as shown in this cross-section, consisting of potsherds, charcoal, or washed cinders, with a layer of Sphagnum directly underneath the sand, the freest opportunity for the passing off of excessive moisture is provided.

The cuttings should be placed in the sand as shown in the engraving, keeping them either in a single line or else in several lines. Not only by this means is the sand relieved of any excess of wetness that might induce decay, but from the general position of the cuttings, the air has a chance to circulate among and even beneath these in a way that utterly forbids the presence of stagnant air about them, as might be the case were they massed closely together as is done in the ordinary cutting bed.

The right hand figure of the two is designed to show how cuttings that are decidedly succulent may be prepared to root with comparative ease and with the danger of decay reduced to a minimum. This consists of cutting a niche into its side, at the point where it should later be severed (*a* in the engraving), and to extend one-half or two-thirds way through its diameter. This done a week or more before the cutting is finally taken off, and it will then be found in a condition to root very easily by the pot system described, and with about every ordinary possibility of decaying removed.

The Nectarine Peach.

This fine flavored September Peach possesses several distinct characteristics to render it interesting in its class. The fruit, of large size, has the remarkable form shown in our engraving of terminating in a nipple. Its other striking peculiarity is that of having but little down on the skin, being in this respect quite smooth like a Nectarine, hence its name.

In color the skin of the Nectarine Peach is yellow, with a bright mottled red on the side next to the sun; the suture well defined, particularly near the nipple. The flesh is semi-transparent, and with a brilliant red stain round the stone, from which it separates, leaving some strings behind it. It is melting, very richly flavored, and with a fine racy smack. The stone has a tendency to split, and the kernel has a mildly bitter taste. Flowers large; glands kidney-shaped.

This Peach was first brought to notice in 1868, having been raised by the famous Thomas Rivers from seed of the Grand Noir imported from Holland. It is offered in the catalogues of several American nurserymen.

Double Buds on Grape-vines.

D. L. MARVIN, WATERTOWN, N. Y.

Many persons have observed that Grape-vines often develop double, thrible, and occasionally quadruple buds, yet few have studied the cause of vines expending so much apparently useless energy and waste of vital force.

If I should say that vines had intelligence and forethought I would perhaps be laughed at. But when we study into why several buds appear when one would usually answer every purpose, we see that there really is such a thing as design manifested here.

Two kinds of buds are developed by vines, leaf buds to carry on the functions of the plant, and fruit buds to perpetuate the species, but both sets of leaves and every other function of the plant has but one object, that is to grow seeds, Nature's primary object always. There are many secondary objects which are of vast importance to man and animals. For instance clothing the seeds with a pulpy envelope to feed the animal world, giving the skin bright and attracting colors to attract the birds, so they will feed upon them and then carry the seeds in their crops to distant places and drop them to clothe Nature's waste places. But now how could the primary object of germs be produced if an untimely frost should kill the single buds? an occurrence that does really happen more or less every year, for Grapes are found wild as far north as Ottawa, Canada.

When the buds are killed upon most plants, that is the end of the fruit, for although ordinary plants will develop and push out what are called adventitious buds, such are always leaf buds and never fruit buds. So there is the necessity for the plant under these hard conditions to provide for such untimely accidents or become exterminated. It is herein that we see why it is that Grape-vines have developed several fruit buds at each node on bearing canes.

We may give this beneficent provision of the vine whatever name we please, we cannot help but see that there has been forethought upon the part of the vine to provide for such emergencies as the untimely frosts of spring.

It often actually happens that a frost comes when the shoots are several inches long and they are all killed, and it is then we see the reason for and the wisdom of providing the dormant buds for tender plants, which immediately push out and develop fruit with germs just as perfect as the ones that would have been developed by the primary buds that were destroyed by frost.

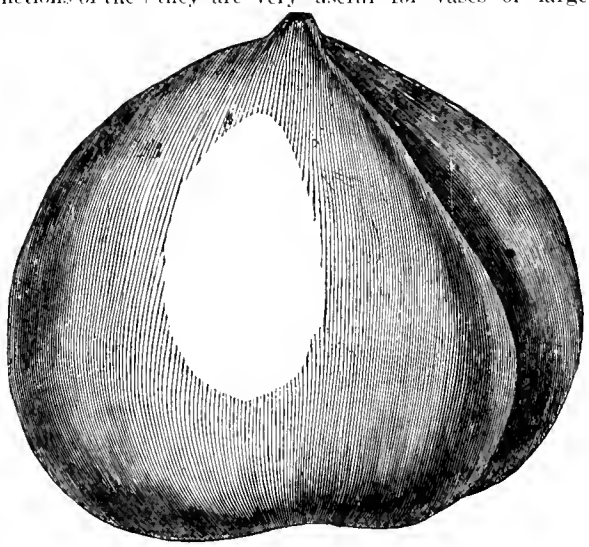
A Talk About the Single Dahlias.

W. A. MANDA, BOTANIC GARDENS, CAMBRIDGE, MASS.

DAHLIA HISTORY. Single Dahlias are by no means new; we had them as long ago as 1789 when the two first species, the Dahlia superflora and Dahlia frustranea were introduced into Europe. Naturally they were single and not much prized on that account. In cultivation those two primitive species got mixed and passed under the name of Dahlia variabilis, a name that still holds good among gardeners. Under cultivation the Dahlia soon improved in size, shape, and color, although the gardeners had only two colors at the time, namely, purple in D. superflua and scarlet in D. frustranea.

With time the varieties increased, especially the double ones, until of late they have arrived at their perfection as to shape and size, but the colors are never so bright and rich as in the single forms. Lacking this last quality, and like everything else that is brought to its maximum and where there is no chance for a marked improvement, so the Double Dahlia is going out of fashion and the single forms are gaining favor in the last four or five years.

That the Single Dahlias should crowd aside the double ones cannot be wondered at, for the single has many points of superiority over the others. In the first place it is more floriferous, the flowers stand out gracefully over the foliage, and when cut they are very useful for vases or large bouquets, for which use the double forms are too clumsy. The colors now are also much more distinct and numerous, for, with the exception of blue and green, all the colors imaginable are to be found in this section, and the rich velvety colors are well set off by the bright golden disk. All these qualities referred to were lost in the double



THE NECTARINE PEACH.

kinds, and it is only now, after nearly a century of Dahlia culture, that we gladly turn back again to the single form.

SINGLE DAHLIAS CLASSIFIED, ETC. The many new and beautiful varieties that have within the last few years been raised may be divided into different classes as follows, namely, the Show, Pefection, Reflexed and Stellate varieties.

The Show kinds have large oblong and flat petals, and some flowers of this section measure as much as seven inches in diameter.

The Perfection varieties are of medium size, the petals are broadly oblong, slightly reflexed at the ends and generally of very good substance.

The Reflexed section comprises flowers with nearly round petals, which are much reflexed at the end, and usually of good colors and substance.

The Stellate kinds are distinguished by their long petals, which are reflexed on the sides, thus forming a loose flower of various sizes and not quite as good substance as the foregoing sections.

Again as to color we can divide them into Self and Fancy kinds. The former are of one color, or shades of one color, while the Fancy section comprises flowers where two or more different colors combine, and to which many fine varieties belong.

A good single Dahlia should have eight petals of good substance and rather broad, so as to form as round a flower as possible. The color, if a self, should be of a clear shade, and if a fancy then of course many freaks may be allowed according to taste.

RAISING SINGLE DAHLIAS. Raising new varieties is effected from seed. These should be saved only from good varieties and from the best flowers. They may be sown in March in gentle heat, and potted off singly soon after germination, and then repotted into five-inch pots, and by the time the roots begin to fill that size they may be planted out, which may, about Boston, be done safely the latter part of May.

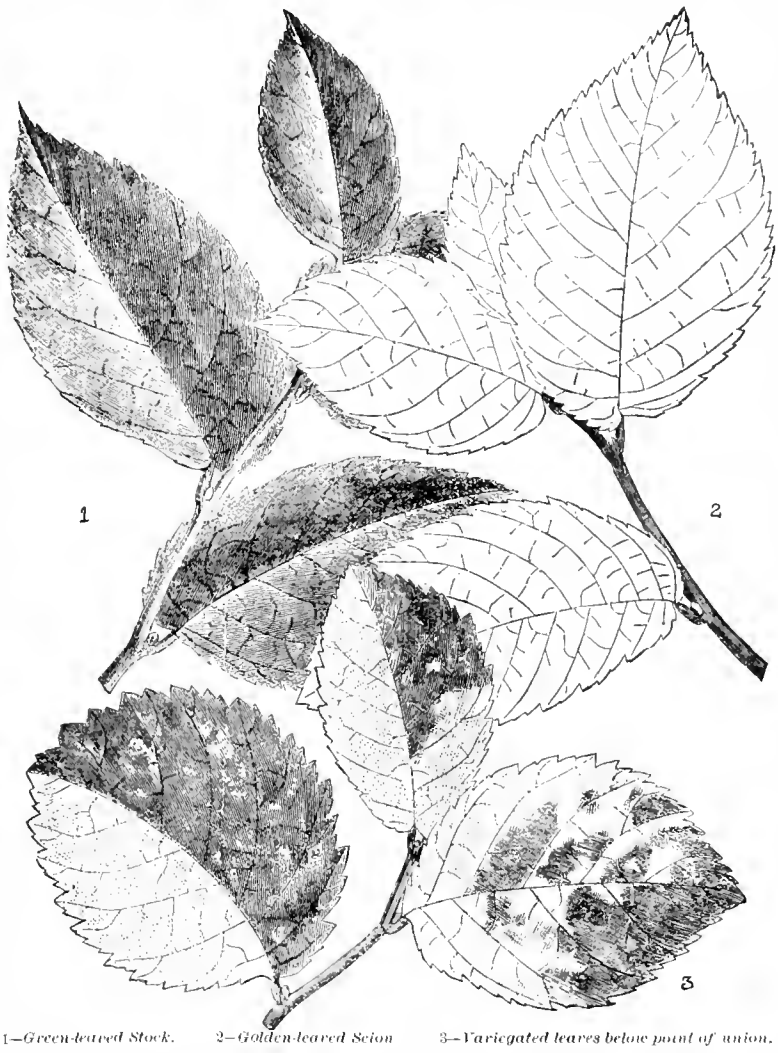
The propagation of any individual variety is done by means of division of the tubers, by cuttings, or by grafting, the last mode being seldom resorted to. The beginning of May, as tubers begin to show growth, is the time for division. The tubers should be cut through the stem, so that each part will have an eye. Plant into suitable sized pots and set in a cool house or frame, where in three weeks' time they will make nice roots and a growth of about six inches. If then planted out they will grow right along and far more vigorous than if the dividing is done just before planting.

When a quantity of any variety is desired propagation from cuttings is practiced. For this the roots should be planted in boxes of light, sandy soil, and be set in a warm house close to the glass. After having completed the third pair of leaves the young shoots may be cut off and inserted in thumb pots and put under a bell-glass or propagating frame, where they soon root. Pot into 4 or 5-inch pots and when weather permits plant out. From a single root a large quantity of plants may be propagated in successional lots, and then the root itself be divided and set out later.

DAHLIA CULTURE. The culture of single Dahlias is a simple one. While like the doubles they like deep and good soil, yet it should not be too rich, otherwise they will grow too vigorous and produce but few flowers. They should have all the sun and light possible, a very important point, as Dahlias, like all flowers of the Composite family, are sun loving plants. A disregard of the foregoing respects is the reason, no doubt, why so many people fail to grow these Dahlias to perfection. Some also plant too close; the plants should be set about four feet apart and the tuber three or four inches deep.

As soon as the growths reach the height of a foot then the plants should each be given a strong stake, three or four feet high, the Dahlia being a rather heavy plant and very easily broken. The stem, and later the main branches, should be tied to the stake, but not so tight as to cut into the stem. A good mulching with short manure is very good, while an occasional hoeing and watering in dry weather is all the care they require until autumn, when the seeds should be gathered from the best kinds. After the first sharp frost the tubers can be dug up and stored in a dry frost-free cellar, or any other cool place where they can have perfect rest until wanted in the spring.

ENEMIES. The Dahlia has very few insect enemies. In Europe the earwigs are quite troublesome, but I have not seen many of them in this country, at least not around Boston. The best way of getting rid of this pest is to hang a few inverted pots among the branches and put some dry material inside the pot: this will attract them as a nice hiding place, and by looking the pots over every morning the earwigs are easily caught.



1—*Green-leaved Stock.* 2—*Golden-leared Scion* 3—*Variegated leaves below point of union.*

THE INFLUENCE OF SCION ON STOCK ILLUSTRATED.

The Influence of Scion on Stock.

The influences of stock on scion, and of scion on stock, have supplied materials for an extensive mass of literature. In this there is nothing strange, for it is a subject of practical importance to all fruit growers. Characteristic illustrations, however, are less abundant, on which account we avail ourselves of the opportunity to bring to the attention of our readers a very clearly defined illustration of the "contagion of variegation," as the late Prof. G. Morren called it, and of which an engraving was recently given in the Gardeners' Chronicle.

In this case a green-leaved Elm of the *campestris* section (See 1 in annexed engraving) furnished the stock on which was emplanted a scion of the Golden-variegated Elm, known as *Ulmus campestris Van Houtte*, the leaves of which are shown on the right-hand side of the cut (2.) The graft was successful, and some time afterwards a shoot with leaves partly green, partly golden, issued from the stock *below* the graft, and this also is shown in the lower part of the engraving.

A summary of our knowledge on this point is given in Burbidge's "Cultivated Plants," a book we should like all young gardeners to be thoroughly well versed in. Darwin, in his "Animals and Plants under Domestication," also mentions numerous similar cases, the most generally known being that cited by Bradley, in which the stock of a Jasmine threw out variegated shoots clearly below the point of union, after having been budded or grafted with a variegated scion.

In former days, when fluids only were supposed to pass from one closed plant cell to another (through the porous membrane), the difficulty of accounting for such phenomena was greater than it is now, when we know that not only liquids pass thus from cell to cell, but that the protoplasm—the living formative material of plants—itself, in some cases at least, passes through minute apertures from cell to cell, thus establishing the "continuity of protoplasm."

FALL APPLICATION OF MANURE. Our recent article on this subject brought out the following practical ideas from D. N. L., Erie Co., N. Y. The difference in effects from manure applied in the fall or the following spring is remarkable, amounting in some instances to as much as three times the benefit to the crop of the coming summer. The fact is that the best effects from spring applied manure is not visible until the second summer after, entailing a great delay. For the North the best time to apply manure in nearly every kind of culture is as long before April as practical, so that the spring rains can carry down the fertilizing properties to where the roots can use them. On any but very sandy soils, the loss by leaching is insignificant. Another advantage from winter manuring in many cases is the benefits as a mulch to existing crops.

Notes From a Rochester Fruit Farm.

CHARLES A. GREEN.

PICKING APPLES. NORTHERN SPY. We picked our winter Apples about October 1st, and it is well we did so, for heavy winds came soon after that would have blown off many. We left the Spy unpicked the longest, as that holds on best having a long stem, and often being hung to a limber twig. The Spies are magnificent and an enormous crop. They are a beautiful sight, all finely colored. The Spy is a profitable Apple here, where it succeeds better than in most places, this being near where it originated. It is a native of East Bloomfield, N. Y., one of our best fruit sections, and was introduced by Ellwanger & Barry I believe. It is of good quality as well as handsome, but varies greatly with the season. Some years it is large, fair and red, while others it is green and knotty. No one can account for these vagaries, which are peculiar to all fruits to a more or less noticable extent. We have a large orchard, all Baldwin. I wish half were Spies. Joseph Harris has a Spy orchard near Rochester, from which he has sold in England at $25 per barrel. His neighbor sold an orchard of apples, unpicked, for $2,000.

LUCRETIA DEWBERRY. I cannot think this will be popular as a market variety; and for the home garden it will be objected to on account of inferior flavor, being exceedlingly sour. It is a large handsome berry, and the bush will occupy less room than the large growing kinds. Without support it sprawls over ground like a Grapevine. Tied to a stake it presents an attractive appearance. I should not risk it uncovered in winter at the Northwest, but is easily covered, lying so close to the earth. The best Blackberry for us is the Taylor (Taylor's Prolific.) The flavor is superior, berry large size, plants hardy and vigorous, canes greenish yellow, and easily identified on this account. Stone's Hardy and Snyder are also valuable hardy varieties.

WILLOWS ON RIVER BANKS. The Honeoye Creek ran the length of my father's farm, and when a boy I noticed the inroads made by the freshets on the crumbling banks, valuable land being removed each season, to be carried down the current to build up land for some one else. A feeble attempt to stay the damage was made by placing stone along the shore. It did not occur to us that cuttings of the Willow stuck in rows along the shore would accomplish a better purpose at one hundredth part of the cost. Willow cuttings (Osier, or almost any kind will answer) should be cut in the spring before leaf growth commences. They may be made a foot long, and as large around as a lead pencil, or, in many instances, of large limbs cut three or four feet long, sharpened wedge shaped (not pointed like a pencil), and driven in one or two feet. These will at once take root, and in a few years not only protect the shores by numerous fibrous roots, but become a thing of beauty. Where the wash of water is unusually severe sods of Quack Grass have been used with good results, especially about mill-dams, but this pest should be avoided if possible, as enough branches of roots may become disengaged to stock the neighboring country. Even the branches of Willows floating in the current, become imbedded in the muddy shore, transplanting themselves, but without injury.

There are fifty varieties of American Willows, varying in size from a few inches in height to 100 feet. They belong to the same natural order as the Poplars, but differ in structure. The bark of the young shoots has been used as a substitute for quinine. Baskets, ropes, cloth and a variety of other articles are mentioned as made from the Willow. The timber is valuable for many purposes, its charcoal for use in making gunpowder and for painter's crayons.

ATTRACTIONS OF FRUIT CULTURE. I am more and more impressed with the fact that few ruralists can make better use of their land than by planting it to fruit. I believe that every honest nurseryman (and I have found but few dishonest; it is the dishonest agents that give erroneous impressions) who sells a bill of trees or vines is doing a good work, beautifying and enriching the earth. I received a letter yesterday from a poor man in Massachusetts who says he has sold $80 worth of berries from one-fourth ot an acre, and that he can scarcely credit the fact himself. In a few localities the business of growing fruit may be overdone, but where there is one such there are thousands where the supply is short of the demand. My neighbor says he gets 200 barrels of Apples yearly from his orchard of one and one-half acres. If he sold the fruit for fifty cents per barrel on the tree, in place of $1.00 to $1.50, he would be making money. There are instances here where a small orchard has annually paid the interest on the entire farm of 100 acres. Pears and other like fruits do not sell at the fabulous prices of old times, but we have learned how to secure larger and finer crops, how to find new markets, and Pear orchards continue profitable. But I always find that the greatest profit has been secured where the greatest skill has been employed.

I was recently told how a fruit grower was succeeding in Orleans County. When I learned how long he had been at work, how he had mastered all details, what good culture he bestowed, how well he assorted, how attractive his packages, I could not help feeling that he deserved success. And when men deserve success they generally get it. The ne'er-do-wells are usually those who expect success to come without effort on their part. Micawber like they are waiting for something to turn up, in place of turning something up with such force as to command attention and respect.

BLACK KNOT IN THE PLUM. I am often asked what remedy I can suggest for the black knot. There is only one remedy and that is to cut off the affected branch at the earliest possible moment. Push out of your shop or office as promptly on learning of a visit of the black knot in your Plum orchard as you would if notified that your bees were swarming, or the pigs were in the corn. Lose not a moment, and when cut burn with dispatch every branch or twig infested. This disease is caused by fungi, live plants too minute to be discerned with the naked eye. In the early stages of growth the fungus is not propagated, but later it sheds its seeds to the winds, carrying death in its path. During winter much damage may occur by permitting the black knot to remain on the trees. Look over the Plum trees now and remove every affected branch. Usually the black knot is not cut off early enough in its growth. As a preventive I recommend good culture and applications of yard manure. Well fed and cultivated trees resist attacks which would destroy feeble trees.

Strawberry Notes.

M. H. BECKWITH, NEW YORK STATE FARM, GENEVA.

Corille's Early was the earliest variety in our trial beds this season. The fruit is a dull red color, with very prominent seeds; medium in size. Its earliness is its only recommendation.

Excelsior, a new variety received from the originator, E. M. Benchley, yielded some very fine fruit upon plants set last August. Berries resemble the Glendale in shape and size; very dark scarlet color, fairly firm, excellent flavor.

May King is an excellent berry for family use; fruit large, very spicy and agreeable flavor; rather soft for shipping.

Jumbo is identical with the Cumberland.

James Vick blossomed very profusely but only a very small percentage of the blossoms produced fruit. When allowed to become fully ripe the berries are sweet and of delicious flavor.

Sharpless still holds its own and is a universal favorite in this section on account of its large size.

Ontario. The foliage and fruit of this variety resembles the Sharpless very much. The berries are of a more uniform shape than the Sharpless.

An unnamed very late variety, received from R. S. Johnston, did not begin to ripen until the other varieties were nearly all ripe. The berries resemble the Cornelia in appearance, the flesh is very soft, the flavor is delicious. The plant has a very dwarf, though vigorous habit of growth. The under side of the foliage has a downy appearance. I do not consider it of any special value.

A Michigan Peach Orchard and District.

The fruit farm of Mr. J. A Pearce, six miles northeast of Grand Rapids, Mich., is thus described:

Not many years ago the site of this successful farm was purchased at $5 per acre by the present owner, with 20 acres cleared, and a Peach orchard, of seven acres, beginning to bear. He has been on the place now five years, and has 25 acres in a Peach orchard, from which he expects this year a crop of about 1,000 bushels. There are about 3,000 Peach trees. He finds Peaches do the best on his soil. He fertilizes them with all the ashes he can get. This he obtains from town. It retards the ripening and keeps the ground moist and firm.

The neighborhood in which Mr. Pearce's farm is located is a Peach-growing section. Among those having extensive orchards near him are Thos. Beale, 2,000 trees; W. O. Braman, about 3,000 trees; Wm. Chambers, 2,000; C. E. Lucas, 2,000 or over; D. Osborn, 4,000; the Hopkins farm, over 4,000; P. Bird, 1,500; Thompson Hill, 1,000; A. E. Hoag, 1,200; J. Spaulding, 1,000; J. Miller, 1,000; B. Murray, 1,000, and Chas. Bissell, 4,000.

Mr. Pearce has also a vineyard of three acres, containing the Worden Grape principally, with the Delaware, Concord, and Agawam, and small fruit in considerable quantities, Strawberries, Raspberries, Cherries, Plums, and Pears. Mr. Pearce expects to be able to market not far from six tons of Grapes this year. Two knolls to the west and south protect the place from the prevailing winds of winter, and afford favorable locations, the one for a vineyard, the other for a Peach orchard.

While Mr. Pearce believes that cultivation is of great value to the Peach and if continued assiduously would ward off the serious effects of drought, still judgment must be used to obtain, if possible, a steady healthy growth, that the wood may ripen properly, to avoid winter killing. One and a half to two feet of wood was a good growth on a young tree and he should desire to restrain beyond that. He grows wood one year to bear fruit the next and aims not to overgrow but to ripen a healthy growth in good condition for the fruit bearing of the next year. Pruning was apt to stimulate a new growth, which would be found killed back the next spring.

Neighbor Koon, another grower, when asked what varieties are the best for a proper succession replied: Alexander, Beatrice, Hale, Barnard, Early Crawford, Richmond, Mountain Rose, Old Nixon, Hill's Chili, Smock, in that order. With the Barnard's and Early Crawford comes the rush of ripening and the glut of the market. The Richmond was a better bearer than the Early Crawford. The Hale was most liable to

winter kill, although with another soil the result might be different.

Mr. Koon thinned all his fruit but the Early Crawford to about four inches apart, but thought five was better. He believed in the profitableness of thinning; that you had better fruit, more growth and greater likelihood of a good crop the next year. His experience was that desired results were not obtained unless the thinning was done early.

Fruit Bleaching Condemned.

JOEL W. SMITH, M. D., FLOYD CO., IOWA.

It should be stopped by enlightened public sentiment and by stringent laws. In POPULAR GARDENING for November A. M. Purdy, of Palmyra, N. Y., says: "We use brimstone (sulphur) in bleaching Apples and all kinds of fruit." The majority of consumers are probably not even aware of the practice, else complaints would have been made, as it is certainly an injurious and fraudulent thing to do. Fortunately it is not quite universal, but fashion and self interest will soon make it so, unless it is checked.

It is found that bleaching positively impairs the natural fruit flavor—that God made—and its value as food, and if not directly poisonous, it is believed to be injurious to health, and is a fraud which is likely to be contagious. Why the practice has become so general is doubtless because one evaporator man does it and so another must, or else not have so fine looking or so salable an article. On the whole it is a short-sighted policy, for the well founded prejudice that largely prevails against it is reducing the consumption of dried fruit immensely.

Take it in my own family, and in many others that have come under my notice, they have nearly discarded the white or sulphur bleached dried Apples and other fruits as far as we knew it was done. Consequently where our family formerly used about a barrel of No. 1 dried Apples—those evaporated rapidly preferred to slow or sun dried—each year, we have latterly almost ceased to use them, and simply because it has become almost impossible to obtain good wholesome *undoctored* fruit.

Whiteness is not so desirable a quality as healthfulness and honest dealing. Besides rapid drying, and mostly in the dark, will produce a very light colored fruit. Close observers know that the unbleached fruit has the best flavor.

Plain jelly, made from various fruits, but mostly from Apples is a most wholesome as well as cheap article, usually made direct from fresh cider, but is also terribly adulterated in some of the larger cities. It is no longer a secret either as to the extent and character of the fraud. There are other deceptions, and perhaps equally bad, but which I must omit to even mention. Public health is public wealth, and should be guarded in respect to all food to the extent of avoiding even the appearance of evil as far as possible.

Fruit Notes from Central Ohio.

While eating Apples to-day from Connecticut and Michigan we were led to consider some of the advantages of railroad transportation, and the blessings that some parts of the country produces fruit abundantly one year while other parts produce none. This section will not average one bushel of winter Apples to the orchard; we rely wholly upon other States for our supply this year.

Of Pears, the crop was abundant. Peaches only a partial crop. Small fruits were a heavy crop. The prospects for a full crop of the latter another season is not very flattering, especially Strawberries. This dry season has been hard on them; old beds scarcely producing any new plants, and new beds, unless set very early, have not made much of a matted row. It being so dry, even up to the present, that runners have only partially rooted, there will necessarily be a scarcity of plants for the trade in the spring; and also of Raspberries, from the fact that the hot weather blackened nearly all of the tips before they were long enough to set in the ground for plants.

It is true that Raspberries and Blackberries will not stand so much cold when the ground is dry as when it is wet, for then the chances are greater that they may get winter killed. A. M. N., Licking Co., O.

Some Flowers Reported on From Pansy Park.

F. W. GOODELL, DWIGHT, MASS.

Marigold Gold Nugget, sent out last spring by an English firm as a remarkably fine dwarf with large flowers, is not worth cultivating. Flowers small and poor and not one in twenty comes double.

French Marigold Butterfly, sent out by the same firm, is elegant when true, the flowers being bright yellow, each petal evenly edged with maroon, but it needs several years more of selection to fix its character, as only two or three plants in a hundred come double.

Tropæolum Lobbianum. Perhaps it may not be generally known that this is the best of the climbing Tropæolums for outdoor culture. The flowers are more brilliant and more freely produced than the common T. majus. A trellis about a 100 feet long has been ablaze with them for several months.

Double Escholtzias. There is no such thing as a good double Escholtzia, the nearest to it being an occasional plant bearing flowers with a double row of petals.

Pontederia crassipes major is a new and most desirable addition to aquatic plants. T. crassipes seldom flowers under cultivation, but this variety blooms freely in shallow water. The flowers are of a rosy lilac color, about two inches across and produced in spikes like a Hyacinth. It is also very interesting from a botanical point. The stems of the leaves have curious bulb-like oval enlargements in the middle filled with air, which enables the whole plant to float. The plants produce runners much like a Strawberry plant, and new plants with remarkable rapidity. A single plant set in my acquatic garden in June has covered a space six feet across with a mass of 300 plants.

Papaver pavonium or *Peacock Poppy*, introduced from Europe with a lengthy and glowing description, is a humbug. It is a native of Turkestan. The plant makes a slender growth from six inches to a foot tall, and the flowers, instead of being of a brilliant scarlet as described, are of a dull red, of small size and no beauty.

The "Running Out" of Varieties Considered.

One of the best papers read before the recent meeting of the American Pomological Society in Boston was that of J. M. Smith, Green Bay, Wisconsin, on "The Deterioration of our Small Fruits."

Mr. Smith asked the question, Is deterioration a necessity? He said that Nature improves very slowly throughout the vegetable kingdom, and he thinks there is no reason for believing that our wild Strawberries are any better or worse than they were 2,000 years ago. Under certain conditions they may have disappeared from certain places, only to reappear again later. If they are annihilated it is for some sufficient cause, but not by the Creator.

But if we do improve a variety will the improvement remain? Many varieties have failed; was this necessary? Mr. Smith asked what is an improved Strawberry plant and answered his question by saying that it was the result of a much higher cultivation, or perhaps civilization, than it could receive in nature. His experience showed that if you keep up a proper standard of high culture and judicious treatment there would be no deterioration. Many new varieties are petted to the last degree, making a magnificent showing in plant growth as well as in fruit, and then they pass to the treatment that ordinary cultivators can bestow, and because this is not congenial, they fail. If we allow a Strawberry to bear fruit, and then plant the weakly, dwarfed runners that it produces, we cannot hope for a healthy, vigorous continuation of the variety.

Mr. Smith considered the Wilson an illustration of the fact that varieties did not run out. Originated nearly 40 years ago, it is still a popular variety in many sections, and in his own experience still the most profitable variety he could grow. Although it originated so long ago and was the pioneer market Strawberry, doing more to popularize this fruit than all other kinds put together, it was yet the standard of comparison, and had never been beaten in yield per acre.

In the speakers own successful growing of the Wilson, since 1861, he has found two requisites necessary. One was rich land, the other to be planted alone under favorable circumstances; the fruit-producing capacity of the Wilson was so great as to leave it little strength to maintain itself in competition with varieties which produce light crops of fruit and big crops of runners.

His method of cultivation is to plant but once on the same ground, using healthy vigorous runners from young plants that have not been weakened by bearing, planting three feet by one foot, and training the runners like spokes to a wheel, so that the plants will not all be in a bunch. He plants in April and all blossoms are kept off the first summer. The Strawberry patch is kept constantly under supervision, and weeds are not allowed to appear. The crop is picked in June of the following year, and then the bed is turned under to be planted for several years with something else. The ground is made rich and thoroughly prepared by subsoiling and superior tillage.

His crops have been uniformly large for many years. He referred to the year 1876, when one fourth acre of Wilson's yielded a fraction less than 100 bushels. In 1886, $3\frac{1}{2}$ acres in the midst of a great drought averaged 250 bushels to the acre. The crop of the past extremely unfavorable season, when cold winds in the spring and the unparalleled drought of the summer conspired against it, showed a yield of 223 bushels per acre for three acres. Even with these heavy yields by high culture he thinks the plants are stronger than when he began in 1861.

In conclusion he urged giving the plants such soil, food and culture as they require for doing their best, or they will suffer in some manner. This rule has been broken and the suffering is upon us. He believes the law is inflexible. We cannot expect Providence to work miracles to save our plants and fruits, in the face of sheer neglect on our part. The only wonder is that the deterioration complained of in many quarters had not been much greater.

484. **Caring for and Planting Bulbs.** Gladiolus should be taken up after several sharp frosts, the bulbs dried and cleaned off, placed in paper bags, labelled, and stored in a dry, cool, but frost-proof situation. The Oxalis requires a similar treatment, but as the bulbs are smaller they should be placed in boxes filled with dry sand. Caladiums should have the leaves removed as soon as destroyed by frost, and three or four days afterward carefully lifted and stood in sand in a dry, cool cellar, or else placed underneath the green-house stage. Dahlias may be treated as advised for Caladiums, care being taken to label the tubers securely, and then they can be placed in barrels or boxes, and stored for the winter in a dry, frost-proof cellar. Tulips for next season's bloom may be planted at any time before the ground becomes frozen, but the earlier in fall the better.—C. E. P.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

BLACKBERRIES IN THE NORTHWEST.

While living in Indiana we repeatedly layered Blackberries after the manner described below by a writer in the Prairie Farmer, with the best kind of success. Had we not removed from there, we should have grown them largely, counting on layering through winter.

"Blackberries can be successfully grown in the cold Northwestern States, if the plants are laid down and covered with earth in the autumn. The Wilson's Early is the most suitable for planting where this course is pursued. The canes of this variety are slender, bend readily and are not easily broken, and in the North where it is protected in this manner, it yields fine crops of fruit. A location where water does not stand any length of time should be chosen, and the plants set about three feet apart in a single row. As they are set all the roots should be turned in one direction—to one side of the row. In the autumn after growth has ceased and before the ground freezes the canes should be thinned to three in a hill and shortened to about three feet in length. Then dig a trench extending from close under the plant three feet outward on the side opposite to the roots, the whole plant to be pressed down into it, and entirely covered with earth. Here they remain until danger from frost is over in spring. All mulch and fertilizers should be applied to the side where the roots are, and the cultivation on that side should be with the hoe, and very shallow. On the opposite side the soil should be cultivated deeply, to prevent strong roots from forming on that side, as it would be necessary to cut them in opening the trenches and the plants would thus be weakened. One man can lay and cover 50 or 100 plants in a short time, and the fine crop of luscious berries thus assured will doubly repay the expense. It is best to set rows east and west and bend plants north."

ABOUT GRAPES AT THIS SEASON.

No better time for pruning Grapes than now. The alternate cane or "Kniffen" plan is best, which is simply to have two wires strung on posts, say eighteen inches apart, and first year train on one and second year on the other, and so on alternate. In starting Grape-vines use best and most thrifty canes that grow nearest to ground for the standard or upright cane.

It's a good plan in severe sections to bury Grape-vines under earth, or even if laid on the ground and held there by a shovelful of earth over vine in two or three places, will do, and be much better than leaving them on the trellis exposed to the severe winter weather.

THE JEWEL GRAPE. FROM A PHOTOGRAPH OF MEDIUM SIZED BUNCH AND BERRY.

STIMULATING STRAWBERRIES BEFORE WINTER.

"I notice," says W. D. Philbrick in the N. E. Farmer, "that a correspondent has experimented with stimulating Strawberry plants in the fall by applying nitrate of soda in solution, a pint of nitrate to twenty gallons of water, using ten gallons of this liquid to 100 feet of a Strawberry row once in ten or twelve days. He says the growth of vines was immense, and when picking time came the next June those rows which received the nitrate bore more than double what was picked from the rows along side which were not stimulated in this way. This is certainly an easy way to double one's crop of Strawberries, and is well worth trying, but it might not always work as well as in this case."

With this idea we can unite. We have scattered manure, phosphate and other commercial manures over the Strawberry beds in the fall with the very best results, obtaining from rows thus fertilized fully one-third to one-half more fruit, and of a far better quality.

EVAPORATED APPLES, ETC.

In answer to some questions received I would say that I do not think it advisable to hasten the sale of evaporated Apples or Raspberries, or any other kind of dried fruit.

I received circulars from scores of commission merchants East and West, in July and August, and without exception they stated that the old stock was all cleaned out and that "the deck was clear." The crop of Apples the country over is exceedingly light, while Peaches have been almost entirely used up in their fresh state and by canning, the stock of evaporated Raspberries is not over one half what it was last year the country over.

We are confident, from good evidence in our possession, that there is a great effort being made by a combination of certain commission dealers to send prices down now to the very lowest point, and to do this they are crying "An abundant crop," "Big stock on hand," "Crop larger than was expected," etc., etc., and when they find the crop is pretty well out of the hands of producers, then you will see a "boom" and prices will shoot up for certain.

We say hold on to your stock a few weeks; prices can't be any lower and must go up.

We do not always pack as fast as the fruit comes in from the evaporators, but put it away in large store-rooms and hold till rainy or damp weather, at which time fruit not only packs better, but then our help cannot work outdoors.

We pack in both barrels and boxes. To get 50 pounds in the ordinary boxes the fruit must be "sweating" and packed in hard as fast as put in.

We prefer to burn coal fast and then sift out the ashes and use siftings in our house stoves after wetting them well with water.

THINGS TRIED AND REPORTED ON.

J. S. Meders, of Mississippi, says he made unproductive Pear trees yield heavy fine crops of fruit by driving nails into the body. "Such fine fruit I never saw as has grown on that tree since." Of course the iron and rust, as also bruising the body, may cause fruitfulness. So many have tried it with success that we advise those having unfruitful trees to give it a trial.

S. F. Johnson, of Ohio, writes us: "I have tried your remedy for fire-blight on Pear trees with perfect success;" which was to slit the bark of limb and body on one side as the blight shows, and putting on body and limbs pure linseed oil.

Ralph Romer, of Maine, writes us he has had fine success growing a few Peaches by trimming limbs low to the ground and covering with earth through the winter; and, too, that he has grown splendid Kittatiny Blackberries in the same way.

S. R. Hooton, of this State, writes that he has had a perfect crop of Cherries and Plums this year by spraying trees twice—a week apart —just after blossoms had fallen, with Paris green water.

A Promising Early Grape—The Jewel.

Favorable mention has several times of late been made in these columns to the new black Grape Jewel. This month we show an engraving of a cluster of the fruit, and offer some further information regarding its unquestionable merits.

It is a seedling of the Delaware, originating with John Burr, of Leavenworth, Kansas. Its most striking qualities are extreme earliness, healthiness of growth, fine eating qualities, and firmness of skin, adapting it remarkably well to shipping. From all we can learn of this variety its qualities may be summed up as follows:

Bunch medium; often shouldered, compact and never straggling; heavy in proportion to size. *Berry* medium size, black, with a heavy bloom, and ripens evenly. *Skin* very firm, enabling it to be much handled without bursting, and does not crack in wet weather. *Pulp* rich, sprightly, sweet to the center; two to three seeded. *Quality* almost if not quite equal to the Delaware, and the best flavored of any early black Grape. *Vine* vigorous, very hardy, healthy, a short jointed grower, almost too productive, hence must be pruned short; foliage thick and heavy; never has been affected by mildew or rot; early in ripening up its wood. *Season* one week earlier than Hartford, Victor and Champion, ripening its fruit in a short time after it commences, and keeps a long time on the vines; does not drop from the stem when ripe.

Mr. George W. Campbell, excellent authority, has recently said of this variety: "It has much to recommend it, as the vine and foliage seem very hardy and perfectly healthy, having shown no signs of mildew or rot. Its extreme earliness will render it specially valuable for those localities so far north that the Concord does not ripen. It was well colored and on August 5th was in better condition than Hartford and Champion usually are when sent to early markets, and on August 15th it was quite ripe. It hangs remarkably well to the cluster, and may be left on the vine without dropping for weeks after ripening. Its skin, though medium thin, is quite tenacious, which will make it a good shipping Grape. It is a little pulpy, but the pulp becomes quite tender when it is fully ripe, and is not very objectionable, as the seeds are very small and the pulp is sweet to the center. In size of cluster I think it will fully equal the Delaware, with somewhat larger berries. In flavor I find it very nearly worthy to take the place among black Grapes that Delaware does among red ones. The vine seems as hardy and as healthy as Concord, but not as strong in growth.

The Jewel is in the hands of Messrs. Stayman & Black, Leavenworth, Kas., for dissemination.

Distance from Market.

JOHN M. STAHL, QUINCY, ILL.

The distance of the berry grower from market plays an important part in his business. To illustrate: Quincy has a population of 35,000, that has been well educated to eat berries three times a day. Hence the local demand is not small; and the near-by growers can control the local market. They can drive to the city in an hour, or less time, and deliver the berries from their wagons to the dealers; whereas, the grower twenty miles away must drive to the railway station, put his berries on the cars, and ship them by rail to Quincy. Though gathered at the same time, they will be at least two hours later in reaching the dealer than the berries brought in by the near-by grower; and to their cost is added the expense of shipment. On account of the longer time, as well as greater expense required to get berries twenty miles away to market, they must be sold at a very small profit in competition with the product of near-by growers; and as a result the growers twenty miles from Quincy rarely market here; they ship at once to Chicago or St. Paul. This gives the near-by growers a good local market; and as the cost of marketing a product is always borne by the producer, and the cost of marketing in Quincy is much less than the cost of marketing in Minneapolis, the grower within an hour's drive of Quincy makes more per quart than if he had to market farther away.

This is not the only advantage of being near a city, small or large. The berries can be got to the dealer in better condition. They are fresher, and not so near crushed by transportation and more handling. Also, the grower near a city can get cheaper labor and more of it when needed. In the city there is a large number of girls and boys who are willing to work at very low wages; the grower near a city can get all the pickers he needs. Away from the city, the growers can get only a limited amount of help. And as the demand in the picking season is fully equal to the supply, wages are sure to be good for the laborers.

But near the city land is higher than away from it. The crop must be charged with interest on the price of the land. However, I do not think this will offset the advantages pointed out above; and unless the land near a city is already occupied by berry growers and competition in the local market is very sharp, it will be better to get within driving distance of the city than farther away, notwithstanding the higher price of the land. When locating, the character of the roads must be considered. The berry growers can afford to pay something for smooth, hard roads over which to transport his products to market.

But, a person situated farther than driving distance from a city, or who finds it very inconvenient to locate within that distance, may well grow berries away from a city. Often it is possible to build up a splendid home market in the near village and among the farmers round about. It is wonderful how nice berries will increase the demand for themselves. For every neighborhood in which the consumption of berries cannot be increased, there are ten neighborhoods in which this consumption can be quadrupled. Among the berry growers of my acquaintance there are none doing better than some who settled down near a railway station in a country neighborhood, where berries had been little grown and not at all intelligently. They have built up a splendid local demand, and although there is now competition, they "have the inside track," while any surplus can be shipped from the railway station.

While, as I have tried to show, there are advantages in being near a city market, yet this does not cut so much figure now as it did some years ago, as my readers know, and I would place above nearness to city special adaption of soil and situation, especially if there was much difference in the price of land. With express trains on which to ship, and pint boxes in which to carry the berries, a market five hundred miles distant is not far away, and berries, with the possible exception of some very soft varieties, can be put before consumers in good order.

A Convenient Strawberry Packing Shed.

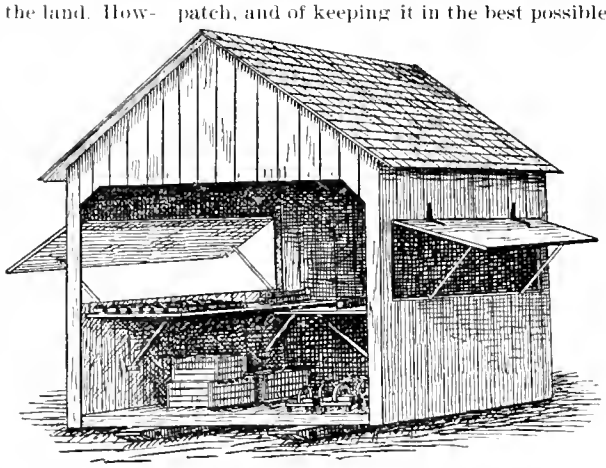
A. A. WILCUS, MADISON CO., ILL.

Having a little leisure I send to you a rough sketch of my packing shed, built last spring, and which has been found very satisfactory. It is a simple affair made of seven-eighths inch planed boards, and is painted externally. The building is rendered portable through resting on two runners made of 3 x 6 pieces, and thus is easily drawn from one berry patch to another.

The end of the shed is open as shown in the engraving. On each side two openings three feet wide and running the length of the building are provided for, the parts covering the openings being hung by hinges above, which allows them to swing out like two awnings, providing shade, with full currants of air.

The interior is occupied with two tables hinged against the outer walls with a four foot passage between. These tables are let down after the fruit season is past, at which time the shed is converted into a store room for crates, baskets, picking stands, etc. A month ago I closed down the side doors and boarded up the open end. In this shape the shed will remain until next year's berry season opens again.

The benefits of a shed of this kind arise through the ability to simplify the handling of a large lot of fruit as it comes from the patch, and of keeping it in the best possible shape out of the wind and sun from the picking time until it is loaded for market.



A CONVENIENT STRAWBERRY PACKING SHED.

P. M. Augur in answer to how he had obtained $1,200 worth of Strawberries per acre says: 1. Use only such varieties as will respond to generous treatment. 2. Plant, early of kinds as by feeding will give a pint and a half of berries from a plant. 3. Apply and mix thoroughly with the soil 100 tons of best horse manure. 4. Set the plants in rows two feet by one and a half, and nip all runners. 5. Hoe, up to freezing, and then mulch until the ground ceases to freeze in the spring, and re-mulch when the fruit is half grown. 6. Allow plants to fruit but once; and 7. Get stock plants from those not allowed to fruit.

Mildew and Aphis on Roses, Etc.

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

I noticed in your November issue an enquiry from M., McHenry Co., Ills., asking for the best remedy against mildew and aphis on Roses. I can offer nothing new in the antidotes against these, but think we have something not generally known in our manner of applying them.

Roses, Grape-vines and Chrysanthemums, besides hundreds of other species of plants cultivated both in the open air and under glass, are more or less affected by mildew and aphis. A certain remedy is to apply a mixture of 1 part of black or virgin sulphur to 9 parts of tobacco dust, applied with a sulphur bellows when the leaves are wet, at least once a week,—twice is better. We have used this as a preventive remedy for many years with the most excellent results on all plants subject to mildew or aphis.

It is best to apply the sulphur and tobacco dust mixed, the sulphur being the specific for the mildew and the tobacco for the aphis. This saves time by "killing two birds with one stone."

The main reason why these remedies fail is owing to the fact that they are rarely long enough persisted in. One or two applications may check the trouble—but will check it only. My rule for these pests is prevention, which need never fail if the remedy is steadily applied.

In our own practice every kind of plant that we know to be liable to be attacked by aphis or mildew is dusted over with the mixture of sulphur and tobacco dust twice each week from June to October. Of course at such times as the Roses or Chrysanthemums are in flower, or when the fruit of Grapes is ripening, it must not be used; but these conditions only occur for a short season during summer, and there is no necessity for using the dust in winter, as then some sulphur on the pipes checks mildew and fumigation with tobacco stems kills the aphis.

Practical Notes on Winter Covering.

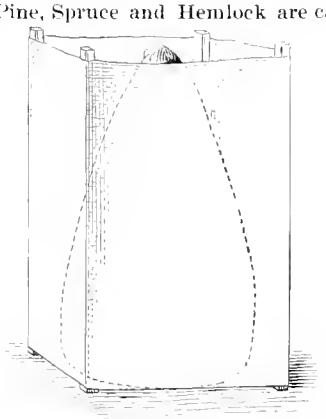
W. FALCONER, GLENCOVE, N. Y.

The cover will depend on the sort of plants to be protected, the exposure of the land in which things are grown, the part of the country in view, and local circumstances. And whatever may be written on the subject can only be suggestive.

SHELTER is the first essential in winter protection. In exceptionally well sheltered parts of Long Island Cunninghamia Sinensis, Cephalotaxus Fortunei and Magnolia grandiflora live and appear to do well, but in an open unsheltered position on the same place any of these plants would not survive a single winter. In building a greenhouse we seek the warmest and most sheltered situation available, both for the good of the plants and economy in heating. Gardeners select a warm sunny spot for their cold frames and hot-beds, and if the shelter is not already good they make it so by erecting close board fences around their frame ground, especially on the north and west sides, and there is no gardener so particular in thus providing shelter as the market gardener—he who makes his living by raising early vegetables. Contiguous buildings, trees, shrubs, hedges or undulations of the land often afford the necessary shelter.

A GREEN CEDAR SHELTER FENCE. Red Cedar grows abundantly around here in woods, waste fields and by the seashore. About the first of December, before the land is locked by frost, I go out into the fields cut down and haul home enough of these Cedars to form a close hedge fence around my frame ground and a nursery patch containing extra choice and somewhat tender stock. The Cedars are 8 to 10 feet high. First, a three-barred 4½ foot high fence (if for temporary use a two-barred one is just as good) is set around the ground, then the Cedars are placed upright against this fence and close up against each other, hedge fashion, and their lower ends inserted into the soil a few inches deep to keep them in place. Then a couple of light wooden rails tacked back of them and fastened here and there with marline holds them perfectly secure; or marline altogether may be used, but in this case every upright must get a turn around. Now this fence keeps good till next May, when I strip it; then I also strip the Cedars and use them for bean poles and stakes. Evergreen trees or branches cut in summer very quickly lose their foliage, but cut in winter they retain them for months. Where the above three-barred fence is permanent, as around my frame ground, I use it in summer as a trellis for Tomatoes, and a support for tall pot plants plunged alongside of it.

EVERGREEN BRANCHES of most any kind, say Pine, Spruce and Hemlock are capital



How Mr. Falconer protects Delicate Trees, increasing the Cloth sometimes to cover the top.

material for protecting all manner of plants. They don't lie flat upon the plants, nor is their foliage so thick as to tend to rot rather than protect the subjects meant to be preserved, and as light covering, where protection against bright sunshine in winter is the object in view, there is nothing better. Branches of deciduous trees lose their leaves too soon to be of much avail, but Oak and Beach, cut early, may come in useful.

MUSLIN. I use many hundreds of yards of this every winter. It is the best, most serviceable and easily handled protecting material for the money it costs and available for many things. It is not in general use and I don't know why, but I strongly advise your readers to try it. I get mine from printing offices. It is the cloth that has been used in cleaning the presses, and costs little more than the price of old rags. I have them sewed into sheets as wide and long as I desire. In October, in the event of frost, it is a very easy matter to run a few sheets of this muslin over Tomatoes and Snap Beans and save them. During the winter and spring months, when our cold frames and hot-beds are covered over with thatch, straw or mats, some of these sheets that had been oiled are spread over the covering to keep it dry from rain and snow, and wonderfully well it does it too. Every year I raise a thousand or more Chrysanthemum plants to bloom out-of-doors, and about the first of October lift and mass them together where I want them to flower, and erect over them a light wooden skeleton frame, which in the event of frosty or wet weather I cover over with this muslin, and in this way get good Chrysanthemums till the end of November. We have many somewhat tender trees, as Deodar, Photinia, Podocarpus, Japanese Persimmon and some others that need a little protection in winter. Around them I drive in some stakes and to these tack some muslin (see engraving). This completely protects the plants from wind. In the case of rather tender sorts, as English Holly, Photinia, Laurels and Araucaria, I throw a few armfuls of dry Oak leaves inside the muslin enclosure, then tack another piece of muslin over the top to keep all snug and dry. I also use this muslin for shading frames and greenhouses, filling holes in buildings in winter, for lining boxes and baskets and for tying up small bundles of plants in. Strips of it also make capital tie-bands for trees.

TREE LEAVES. Among leaves for all purposes of winter mulching I prefer dry Oak leaves, because they keep so open and dry, and do not settle down and rot so soon as do Maple, Linden or other leaves. But for mulching Rhododendron, Azalea, Andromeda and Kalmia beds in spring, where the object is a summer mulching, a protection against heat and drought, I would not much care what sort of leaves I should use. For many things Oak leaves are a capital mulch, as, for instance, around Hollyhocks and Foxgloves close together in beds, but for miscellaneous herbaceous plants in order I would sooner have manure. In the case of small rockeries or groups of choice delicate plants a few armfuls of dry Oak leaves scattered over them, and on top of that some evergreen branches, is a better and safer covering than manure.

ROTTED MANURE. About the first of November I cut over Phloxes, Larkspur, Kœmpfer's Irises, Day Lilies, Plantain Lilies, Paeonies, perennial Sunflowers, Asters, Balm and other herbaceous perennials, and for tidiness sake clear away all the tops to the root pile, then root out all rough weeds. If we have only a few perennials scattered here and there we may manure or fork over the ground at once. But as my borders are very large and the number of plants grown in them quite numerous, and in fall a multitude of self-sown seedlings of Larkspur, Foxglove, Salvias, Coreopsis and other plants come up, I do not fork over the ground till spring, because I may wish to save many of these seedlings. I therefore merely spread a liberal dressing of well-rotted manure all over the surface of the ground, there to remain till spring, when I fork it under. This not only helps the little seedlings but protects the crowns of the old plants, and in considerable measure prevents lifting by frost in winter. Indeed, one of the evils of digging among perennials in the fall is in thus rendering them more liable to be raised by frost. In the case of evergreens, as Thrift, Statices, Penstemons, some Veronicas and the like, avoid covering over the leaves with manure. But as regards Japanese Anemone, Sargent's Plumbago, Mist flower and some others that are not extra hardy and die down to under ground in fall, we can mulch pretty thickly. See that you mark the places of Gypsophila, Platycodon, Fraxinella and Asclepias when they are cut over, as they are hidden from sight in spring. In the case of Siberian, Kœmpfer's, and other Irises that grow up in clumps, we may mulch quite liberally about them, but we should avoid mulching, more than very lightly, about German, Crested, Florentine and other kinds of Irises that have surface-running rhizomaton root stocks, else they will rot after they begin to grow in spring.

About the end of October I clean my Strawberry patches and spread a good dressing of short manure between the rows. In December as soon as we have a good crust of frost I add a slight mulching overhead of sea thatch. Field mice are extremely destructive in winter where they get any cover, as in a strawy or grassy mulching, and even in the case of young evergreen conifers where some grass and leaves collect under them the mice find a pleasant home, and bark the trees in payment for their hospitality. Knowing this, I clean out everything from under young evergreens in October

and in November scatter a dressing of rotted manure under and about them. And as a dressing for grass lawns, no matter whether used as a fertilizer or a protection for short grass against winter frost, there is nothing I like better than well rotted farm-yard manure, but I would not put it on before frosty weather sets in. Then I can wheel or cart over the lawn wherever I wish to without hurting the grass.

AMARYLLIS ATAMASCO.

ROUGH OR LITTERY MANURE is a capital mulch for Roses, or, in fact, most anything where there are no field mice, but wherever these rodents abound, strawy manure should not be used for outdoor mulching.

SALT MEADOW HAY cut in July or early in August and well saved is a capital mulch for low plants when used thinly, and it lasts well about trees and shrubs in summer.

THATCH. The very rank grass we cut along the water's edge in salt meadows makes a most excellent covering for herbaceous plants or Strawberries, or to scatter thinly over leaves to keep them in place. I also use it in quantity for covering frames in winter and mulching about trees in summer. It is so heavy that the wind does not blow it about as it does hay or straw. I prefer to cut it about the first of September.

The Culture of the Amaryllises.

A quality of these valuable bulbs that commends them to popular favor is that it is unnecessary to disturb the roots frequently by repotting or otherwise. They enjoy being let alone for a considerable period, in this respect being quite accommodating to those growers who like to manage their plants with little trouble. A fresh pot of earth once in two or three years is enough, and will grow better plants than can be done by the annual shift usually practiced.

But as the bulbs should remain long planted when once they are set, this operation should be well performed, not that the plant is especially particular like some, but it at least requires fair treatment in the respects which follow: The soil should be a substantial loamy compost. The bulbs should always be potted firmly, and especial attention should be paid to drainage. For this there should be no stint of potsherds, and they should be carefully laid, having a piece of rough turf placed over the cracks to prevent dirt from settling among them.

One point in the culture of Amaryllises it is, however, not difficult to make a mistake in. We refer to not providing a decided season of rest annually after each period of growth and bloom. It is also worthy of mention that the drying off must be done in a gradual manner. When this is accomplished properly the foliage will sometimes remain fresh and plump for a couple of months without water. So long as the plants are thoroughly at rest, it matters not whether the foliage dies away altogether, or a few leaves remain green during the rest.

The spring is the best season for planting or repotting Amaryllises, as this is their natural season of root growth. In managing a considerable lot of them it is a good plan to repot a portion, say one-third, every spring in turn, and then not allow a single flower on the last lot potted, but to pinch out the flower bud as soon as it appears. By observing this rule, and the one laid down concerning a suitable rest, and by keeping them cool, the bulbs will subsequently flower with double the strength of ones not treated in this fashion.

When first starting Amaryllis bulbs one good watering to wet the soil thoroughly will be required, and then no more must be given until it is nearly dry again. From this stage increase the supply according to the progress of the plants. When in full growth they will bear liberal watering, but this should never extend to over-watering. After the first year regular supplies of weak manure water are of much value to the plants. When the full growth has been reached it should be noted that water will be less frequently required, a matter also to be strictly respected.

For promoting good growth and bloom a temperature of about 60° is the most suitable. The plants dislike cold draughts on them during the stage just referred to. Generally speaking the storing of Amaryllises should begin about the end of February, although there is no difficulty to force them by starting the bulbs a month or two earlier than this. Where it is desirable to keep up a succession a batch may be started every three weeks as long as the bulbs last. It is a mistake, and one yet much persisted in by growers, to suppose they require a strong bottom heat.

Our engravings represent two distinct styles of Amaryllis, the upper, A. Atamasco, being an attractive native species that is found growing wild in wet places from Virginia southward. The flowers are large, white and pink, and the species possesses merit for cultivation. The lower engraving shows Amaryllis Johnsonii. The flowers are deep red with a white stripe down each segment. It is a specially hardy and robust grower, and one of the most valuable sorts for pot culture.

AMARYLLIS JOHNSONII, (COLOR DEEP RED WITH WHITE STRIPE).

Begonias as Window Plants Again.

M. D. WELLCOME, YARMOUTH, ME.

The article on Begonias as window plants in a recent issue I endorse. To me there is nothing so satisfactory for the winter collection, and I have made them a specialty, each year adding new and beautiful varieties. These I obtain chiefly from Hill & Co., Richmond, Indiana, as I find them no where else. I will mention a few of rare beauty, quite unlike the well known varieties:

Olbia. The leaves are from seven to ten inches in diameter, and divided into several sharp points. The veins are sunken, giving to the surface a crape like appearance. The color is varying shades of brown and red, which in the sunlight has a lovely effect. The plant has a heavy trunk bearing erect branches. Flowers are large, lemon white.

Rubella. This in its habit of growth is quite dissimilar to the former. It is an Indian species. The leaves spring directly from the root and are borne on very long drooping stems. Color, olive green blotched with red. The ribs are banded with purplish brown, under side red. Very handsome and finely adapted for a hanging basket or a window bracket.

Alba picta. Of shrubby growth. The leaves are long and slender, glossy green thickly spotted with white.

Gloire de Sceaux. A novelty of last year. Erect and compact; the leaves are large as those of the Rex varieties, short stemmed, color deep plum with metallic gloss. The flowers are rose color and are borne in great abundance during the winter.

Maniculata aurea. Beautifully variegated. Leaves large, glossy, light green, profusely blotched with bright yellow. Flowers pink.

Dr. Nachtigal. A late novelty from France; very fragrant.

476. **Cuttings of Lapageria Rosea.** Cuttings rarely succeed. Increase by layers or seeds; the latter method being preferable.—C. E. P.

Song of Leaves.

Red leaf, gold leaf,
Flutter down the wind:
Life is brief, oh! life is brief,
But mother earth is kind:
From her dear bosom he shall spring
To new blossoming.

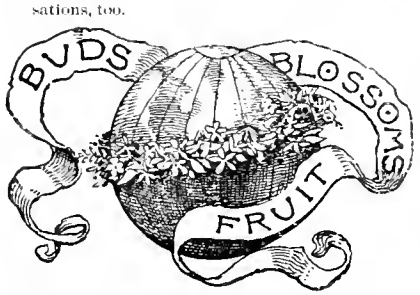
The red leaf, the gold leaf,
They have had their way:
Love is long, if life be brief—
Life is but a day;
And love from Grief and Death shall spring
To new blossoming.

Chrysanthemums.

Of all the flowers that blow between the snow and snow—
The Trillium, the Lilium, the Leucanthemum—
There are none in all the row that make so great a show
As that lingering flower of autumn, the Chrysanthemum.

The Violet and the Rose are sweeter, I suppose,
And more modest is the pink Mesembryanthemum,
But for eyes as well as nose, and to please the maids and beaus,
There is nothing like the gorgeous, gay Chrysanthemum.

December is a trying month, the frost one's hands benumbs,
But then it is the happy month when merry Christmas comes,
There is nothing without drawbacks; let's be thankful that it's true;
There's no drawback you can mention but has compensations, too.



Keep down plant insects.

Renew early in the month.

The garden favors intellect.

Moisture hastens decay in fruit.

Ask your friends to subscribe also.

Avoid chilly drafts on growing plants.

If Heliotrope gets frozen, throw out at once.

This is the worst month for the Lettuce forcer.

We prize the Purple Hazel as an ornamental shrub.

You missed it on Primulas if blooms are not yet near.

The Worden is so far preferred to the Concord in our vineyard.

Didn't your Golden Elder color well? It won't do so in the shade.

The surface soil of pot plants had better be kept loose in winter.

Liquid manure only for plants that are in actual growth or in bloom.

In plant culture the prince and the peasant stand nearly on common grounds.

The Popular thing to do: Subscribe to POPULAR GARDENING AND FRUIT GROWING.

The gardener who trenches deeply and manures heavily is sure to come off best.

A plant like Ivy, hardy out-of-doors, may suffer from a slight frost bite when housed.

Get in seeds of Centaurea candida this month or it wont be worth while. Slow growers.

If you have money to fool away, seed down the young orchard to clover, grass or grain.

Summer mulch must be drawn from the young trees if you would save them from mice.

Kerosene is cheap, and a single lamp will do wonders in a small plant room to keep out frost.

Onions are not of the things that like warmth in the winter, a steadily frozen condition suits them better.

The Double White Phlox Drummondi possesses the additional charm of being sweetly scented.

Our aim in the greenhouse is to have a good breadth of cutting bed filled with slips before this month is out.

In Lettuce culture little water when there is little air must be the rule. Many mistakes are made just here.

What One Dollar secures here. More than 1600 practical articles and 250 engravings in the annual volume.

Roman Hyacinths started in September, if now fairly encouraged should give plenty of sweet bloom by Christmas day.

Our nearest approach to a Paradise on earth is by way of a good garden, that abounds in flowers, fruits and pleasant trees.

A Great Camellia Plant. In Birmingham, England, there is a large Double White Camellia tree 17 feet high and the same measure across.

The getter up of a club to this journal is a true horticultural missionary, and one who does the cause of American horticulture a genuine service.

Quinces. Large crops of the finest fruit are grown on our land, which lays high and is rather thin, by the course of applying a liberal coat of manure every year.

An annual subscription to this journal makes a most becoming Holiday present. Do you take the hint? Send on subscriptions promptly and we can return receipts before Christmas day.

Parchment paper, strong, thin, almost transparent, and that which does not lose its strength when submerged in water, is being offered as a substitute for glass to be used in frame making.

What is wanted in the description of new sorts is the correct time of maturity. In hundreds of things the mere being off from the truth by a week's time makes the whole difference between profit and loss.

Bark Louse. A practical writer says the best remedy for this insect is leaf tobacco boiled in lye until reduced to a pulp, and then mixing enough soft soap to make the whole like thin paint. It is not easily washed off.

Strawberries can without any great difficulty be forced to fruit in winter, only quality must be left out of consideration with those coming on before April 1st, as air and sunshine are important features in imparting flavor. The fruit sells by its color however.

A club of five subscribers, at one dollar each, secures an extra copy to the getter up of the club. We believe that ten or fifteen thousand clubs of five each could easily be raised this month by our readers. How we would appreciate just this kind of help in December!

Some Pumpkins. They were of the Sugar Pumpkin variety, and grown by our subscriber, Curtis Babcock. One single vine outdid anything he ever heard of, or we either, producing 39 specimens fit for cooking, seven of which alone weighted 227½ pounds in the aggregate.

Water-proof paper for packing plants, etc., may be made by taking twenty-four parts of blue soap, to be procured at drug stores, and four parts of white soap, fifteen parts of wax, and boil it with 120 parts of water. Dip the packing paper into this letting it well soak, and then hang it up on cords to dry.

A New Dwarf Lupine. Messrs. Haage & Schmidt of Erfurt, Prussia, offer the new variety illustrated herewith as Lupinus albo-coccineus nanus. It is spoken of as being remarkably free blooming, while possessing the merit of assuming a handsome compact bush of about one foot in height and breadth, and bearing its bloom well above the foliage.

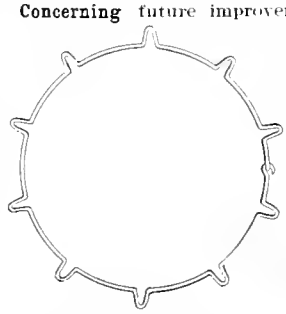
Banana Fruiting in the Open Air. It is reliably stated that Dr. W. N. DeVille, a druggist of Jefferson City, Mo., has had a plant of the Banana, *Musa paradisica*, which bore fruit the past season. The summer climate of most parts of the United States is fairly well suited to the Banana and the plant might receive more attention from American growers.

"It is English." Now that we as a people find so much to admire in English ways and fashions, POPULAR GARDENING would be glad to see more of our wealthy ones pattern after their foreign cousins in the sensible matter of possessing ample country homesteads. In England landed property is the highest ambition of men of wealth. It is a most praiseworthy ambition.

Three "Dont's" in Strawberry Culture. Mr. G. J. Kellogg, of Janesville, Wis., epitomizes a good deal of wisdom on an important point, as follows: Don't accept as a gift plants from a neighbor's *old* bed. Don't take plants from your own unless you know them to be pure and no pistillate varieties set in that bed. Don't plant a pistillate unless you have some reliable kind to set along side of it.

What do you think of the Apple? writes our correspondent Samuel Miller, of Bluffton, Mo., concerning a handsome specimen sent to us, of the crop of 1886, kept by a new preserving process. What we think is that such a process, if it proves to be inexpensive and applicable without bad effects to all varieties, would be of great worth in helping to equalize the fruit crop. We hope to learn more of this method.

Concerning future improvements POPULAR GARDENING AND FRUIT GROWING seldom indulges in puffs or promises. It prefers to point simply to its past record, showing the improvements that have from month to month been wrought *without promises of any sort*, as an earnest of the spirit that constantly prompts its publishers in this direction. So we say, would you know of the future? Then look to the past.



Training Wire for a Pot.

"Soot water," writes "J. M." "is a cheap and easily made fertilizer for pot plants. It benefits all kinds. It also clears worms from the soil. I prefer to use it only after the roots have taken to the soil freely. To make it, half fill an old bag with soot, adding a brick for weight, tie up the mouth and sink it in a barrel of water. Begin using it in moderate doses. The strength to apply it can best be determined with some practice by the cultivator.

Butter and Eggs Weed. We have a threatening nuisance here taking possession of the streets and fields, and farmers do not seem to be awake to the danger of tolerating its presence. I mean Toad Flax, known also by name of "Jacob's Ladder" and "Butter and Eggs." I find it almost impossible to kill it by digging. Its slender thread-like roots run deep and spreading. Heavy and persistent salting seems the most effective.—*M. H. W., Elmira, N. Y.*

Twelve Everblooming Roses. The following list of desirable varieties constitutes the choice of Mrs. Wade Burden, of Greene Co., Missouri, an amateur of much experience: Appoline, Countess de Labarthe, Bon Silene, Catherine Mermet, La France, of various colors of rose and pink; Perle des Jardins, yellow; Marechal Neil, yellow; Clau Carnot, buff; Malmaison, flesh color; Marie Guillot, very white; Madame Margottin, yellow, red centre; General Jacqueminot.

"It is not a poor flower," says A. V. D., of Cumberland, Md., in speaking of the Cosmos hybridus, which some one has said is not worth the room it occupies. Our correspondent further remarks: "I have them in full bloom now (October 10th), excelling in beauty the Japan Anemone. I have lovely pink and white ones, the petals crimped and lovely, making a beautiful cut

A New Dwarf Lupine.

flower and one that keeps fresh a long while. It takes up a good deal of room perhaps, but for this it pays in the beauty of its blossoms."

Clubs are easily made up for this paper. Its beauty, worth and price do the business where there is only some one to help the matter along a little. Reader, will you not see what can be done among your friends? The present month, when nearly everyone is renewing or changing their periodicals, is just the time to bring the needed pressure to bear. Our journal is com-

paratively young and unknown, hence in very many cases an introduction only would be required to secure for it another supporter in each case. Once such are subscribers we will try very hard to hold them on the intrinsic merits of the paper.

Hard Putty. The Carriage Monthly gives the following for a hard putty that will dry in one day: Take whitening, mash all the lumps out on the stone, and mix it into a stiff paste by adding equal parts of japan and rubbing varnish; then add as much keg-lead as you think will make it work free with the knife; then add the rest of the whitening until you have it to suit you. If you want putty that will dry quicker, take dry white lead, and mix with equal parts of japan and varnish, to which add a few drops of turpentine. This is very soft for putty, but can be sand-papered in from two to three hours, becoming perfectly hard in that time.

A Floral Cow, wrought in Hydrangea flowers, was shown at a New England fair, reports one of our subscribers. It may have been appropriate to Dairy Hall, as the writer says, but merely as a floral design we are sure it was a marked failure. We have yet to see the often made attempt to represent a horse, cow or sheep in flowers or bedding plants, carried to a pleasing success, for the simple reason that the legs, comparatively slender in each case, cannot thus be delicately enough molded. An elephant or an owl may be made with comparative ease, because of their natural clumsiness of appearance. These have been made in such fine flowers as Violets, to be really handsome in the sight of those having a fancy for extreme oddities.

School Yard Adornment. In the January issue of this journal there will appear an illustrated article on school yard adornment, to be followed by others throughout the year. It is a subject that is attracting increasing attention, as it well deserves to, and we mean, in coming issues, to give considerable space to practical information, having in view the improvement of the thousands of school yards of the country. Plans of school yards or other matter relating to the subject and which could be furnished by our readers would be thankfully received by the editor, and would be used for giving it the wide publicity which all matter that appears in these columns merits. Let us hear from many teachers, parents, and committee men on this subject.

Training Wire for Pots. In tying out the branches of Pelargoniums, Chrysanthemums, and many other plants in training for good shape, a leading difficulty met is in the matter of places to tie to. Numerous stakes thrust into the pots interfere with the roots, besides looking unsightly, and they are apt to bend or become drawn out of place. To render this matter easy some English gardeners employ the simple and convenient wire device shown figured herewith, the same being slipped over the pot from the bottom up and to rest against the rim. The small projecting bends afford places in which to attach the twine. The same may also serve to attach supports in case it is desirable to suspend the pots. By the aid of such a collar almost any plant can readily be tied out for increasing shapeliness of form without the use of a single stake.

Lilium candidum in the Window. This beautiful hardy Lily makes one of the best plants for window culture, and if a number of bulbs be had can have some of them in bloom from March to June, the time when those planted out-of-doors bloom. Do not keep the bulbs long out of the soil after removing them in the fall, as it is necessary for success that they make their roots and leaves before severe weather. After potting leave them out-of-doors until after a good sharp frost or two, then one at a time can be brought in and placed in the window, giving plenty of light and sufficient water to keep the soil moist, but not wet, as stagnant moisture around the bulb of any kind of Lily causes decay of the roots. If the atmosphere of the room is dry Red Spider is apt to appear on the underside of the foliage, and in order to prevent them making any headway, sponge occasionally with water. Weak liquid manure is also beneficial as the flower spike develops.—*M. Milton, Youngstown, O.*

Meddling with the Names—a Protest. Would it not be for the interest of leading seedsmen to use the proper names for their earliest varieties of vegetables? In numerous cases they prefix their own name to the same variety, each claiming it to be the best in some respect, when, without doubt, they are all the same, but they are apt to mislead the purchasers. We all know that for the interest of all we have entirely too many varieties. It is an increased expense to the seedsmen and a perplexity to the purchasers, with no benefit that in any degree pays for the extra trouble, and when to the already too many varieties is added the different names referred too, the perplexity is still further added to with no compensating benefit. I am aware that considerable has already been written and said upon this subject, and I am further satisfied that nothing will be done unless by preconcerted action of the seedsmen together. We who purchase seeds can only enter our protests, it is for the seedsmen to make the change.—*N. J. Shepherd, Miller Co., Mo.*

Chicory or Succory, a vegetable rarely seen in American gardens. In some other countries it is much esteemed for its leaves, which are used

CHICORY OR SUCCORY BLANCHED.

as a salad, either in the natural state or blanched. Cut in thin shreds and mixed with vinegar and oil they are largely used as a seasoning for boiled beef. One variety, called the Coffee or Large-rooted Chicory, is sometimes grown in our gardens for its roots, which are dried and used as a substitute or flavoring ingredient for Coffee. The culture of the plants for any purpose is of the most simple kind, the conditions suitable for Carrots answering well for them. The plants are perennial in habit, but it is well to raise them from seed every year, clearing out the old plants about to run to seed. The leaves are gathered as they are wanted by cutting near the ground; they may be cut several times in the same year. For forcing as a winter salad this vegetable is quite popular abroad, owing, in a measure, to the ease with which it is managed, no doubt. For the purpose, seed is sown thinly in the open ground in June. At the beginning of winter the plants are taken up and their leaves are trimmed off just above the neck of the root. Then in a dark cellar or other place, the temperature of which is not too cold, sloping heaps are made, composed of alternate layers of sand, or of soil, and of Chicory roots placed horizontally with the necks pointing outwards clear of the heap. If the soil is dry a slight watering is beneficial. In about three weeks' time, if the air is not too cool, leaves eight or ten inches long may be gathered. The Large-rooted variety grown to the size of a finger is much used thus for forcing in the vicinity of Paris, France.

New York Floral Notes.

People are coming back to town now; the season's festivities have begun, and the florists rejoice in proportion. It is too early yet to notice any decided new departures in decorations, as no very great entertainments have taken place.

Every big florist nowadays has a regular pottery annex, with a large assortment of vases, jars and the like. The new styles are exceedingly artistic, being, for the most part, copies after the antique in the fine grades of majolica. It is a little bit incongruous, however, to see the facsimile of a Greek cinerary urn, minus its cover, massed with flaming Chrysanthemums. Mr. Siebrecht is the originator of a very pretty candlestick, to be used in adorning a dinner table. In shape it is like an ordinary candlestick, flaring at the top into the form of a classic three-beaked lamp; the candle stands in the middle of this, while the surrounding bowl is packed with moss, and filled with flowers, so that the candle rises in the center of a bouquet. The stand has a long, slender handle, reaching to the top; it is made of majolica and is very graceful in appearance.

The chief objects of interest in floral circles are autumn shows; and we have three very handsome ones to chronicle. The first was that given by Mr. Le Moult in the Eden Musee. It differs from the others in that it was purely a show of picturesque effects, and therefore was not to be regarded in a professional or scientific light. It was intended to show what could be done by picturesque grouping, and the effect was most charming; a group of Palms in the centre was really beautiful. Professionals were chiefly interested in the plant of Vanda Sanderiana belonging to Mr. Bush. It had a fine spike of bloom, and though not the specimen for which Mrs. Morgan paid such an extravagant price, it was a good representative.

Mr. Le Moult's baskets were extremely pretty, and presented one very novel feature; each one contained an inner vessel of water, so that the flowers kept as well as in a vase. A very pretty one consisted of three baskets, filled severally with pink, crimson and buff Carnations. Baskets of Chrysanthemums were made up with autumn leaves and stiff, heavy foliage—the only proper and fitting accompaniment for these flowers. A great many florists make the mistake of mingling fine Ferns with the Chrysanthemums, with very poor results. This was the prevailing error at the two great shows, the New Jersey Society's at Brick Church and the New York show.

Mr. Le Moult showed some lovely Corsage bunches at the New York Exhibition; long, loose bouquets of graceful shape. One was composed of Lily-of-the-Valley, with a base of purple Violets; another was a combination of American Beauty and Roman Hyacinths. The handsomest hand bouquets shown were simply masses of one sort of Roses, without any mixture.

The Langtry cup, given by the great beauty to the New York Society, called out some elaborate work. This prize was offered for the best room decorations suitable for wedding or reception, the display filling a space of thirty by fourteen feet. Suitability and taste were counted as giving more points of excellence than value of plants. The winner of the cup showed in facsimile a portion of a reception room. There was a door space, massed with Palms, and a little nook, slightly furnished, backed with a most graceful arrangement of palms and cycads. The melting green of the palms was the very thing to soften the light in a brilliant room, and the arrangement left nothing to be desired. The other entries consisted of fine plants well arranged, but they were less appropriate to a room, though very fine as arrangements of decorative plants. A very pretty arrangement for the table was a low plateau of Roses, Perles, Mermets and Cooks, arranged in three divisions, mingled with small Palms and Crotons. Selaginella makes a pretty flat plateau, as a ground for fine flowers; some florists grow it in flats for this purpose.

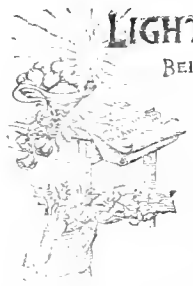
Some very fine Chrysanthemums were shown at Brick Church and New York. Among new varieties, G. T. Moseman deserves a very prominent place; it is an immense, wildly irregular Japanese, terra-cotta inside and buff without. Mrs. Frank Thompson is another immense flower, suitable for exhibition purposes. Cullingfordii is a very good thing, comparatively new; it is a recurving Chinese, with a rich, velvety bloom, and a perfect ox-blood color. It is one of the things no florist should be without. William Battomly is a very fine white, but the best exhibition flower on view was Troubadour, a big pink Japanese; it was the nearest approach to perfection in the eyes of the judges.

A florist, who grows the flower strictly for trade purposes, can worry along on about twenty-five characteristic Chrysanthemums, but amateurs who have the craze badly will run into hundreds.

So far, there are not nearly so many Chrysanthemums offered by the street venders as last year; those sidewalk merchants run chiefly to Roses now. But the Mikado's flower has an assured place; every one has to grow them, and it is no use to grow poor varieties.

Papa Gontier is meeting with increased favor; it is a very satisfactory Rose. Madame de Watteville is another new favorite, though the old stand-bys hold their ground. The last new Rose is the white Souvenir d'un Ami, and a pretty thing too. New Roses have been hardly such an epidemic this season as last.

EMILY LOUISE TAPLIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Should be Spelled Keiffer. A discussion concerning this Pear, by the American Pomological Society recently, brought out a statement that the originator said he spelled it "Kei—" but pronounced it "Keffer."

Ahead in one Respect. Mr. Ohmer, in one of his recent talks, referred to the fact that the Peach blossom is surrounded by a little cup, which so protects the ovary that it will stand more bad weather than other fruits.

The Coat was Too Light. I had occasion to transplant about 200 Raspberry plants last fall, and to save loss I laid them down and covered them, as recommended by some growers, with soil, but the rain washed off considerable of the cover, and the freezing and thawing has thrown out many of the plants, so I was obliged to pull up some and cover the rest over again, while some which I covered with old straw are in the best condition.—*O. W. Aldrich.*

Flowers in Alaska. It is not all snow and ice in Alaska, and we found everywhere some flowers. On the island upon which Sitka, the capital of Alaska, is situated, there are said to be over three hundred kinds of flowers. There is little cultivation of flowers. I think any one would be surprised, however, at the number and beauty of wild flowers growing there. At the foot of Mt. Saint Elias we plucked some of the most beautiful flowers.—*Mr. Sessions before the Columbus (Ohio) Society.*

Planting in School Yards. At the last meeting of the Western New York Horticultural Society it was resolved that the Society specially and earnestly recommend to all our colleges, academies, and all other institutions of learning which own grounds, to plant and protect in growth on these grounds as many different species as may be practicable, both for the ornament and shade they will afford, and for the aid they will render in giving lessons to the students on their distinctive character and value; and that instructors be required to study these characteristics, not only for their own benefit, but for imparting this knowledge to the young.

Pointed Remarks on Flowers. For brilliant hues, and for a constant succession of blossoms, no annuals can excel the Petunia and the Phlox. They are healthy, robust plants, that are successful with amateurs. Asters are desirable, because they come into bloom after the greater share of garden flowers have passed their prime. Tulips are a riot of colors, and no counter spread with velvets ever showed so soft and lustrous as a bed of Pansies. While Prairie Roses and Multifloras have all failed me, old-fashioned French Boursalts yields neither to winter's cold nor summer's drought. In house plants a few choice specimens are better than numberless poor ones. —*Mrs. Lilson before the Wisconsin State Society.*

Lessons from the Drought. Among the lessons taught us again this year, and taught with renewed emphasis, are greater variety of crops, deep plowing, frequent cultivation, not too deep, cultivation of all orchard trees, and something as to rotation of crops. Mr. Murray's cultivated orchard of seven acres holds its place at the front with one thousand to twelve hundred bushels of Apples, while orchards not cultivated have scarcely any. In his nursery may be seen tens of thousands of grafts, thousands of Evergreens, and Roses of forty varieties, that show what has been done with a nursery on our soil, and that too, in the worst of all dry years, by intelligent, earnest work. Two-thirds of his sixty thousand Celery plants have been nursed through the drought, and are now likely to make the best of Celery for market. *From Missouri Report.*

A Horticultural Picnic given by the Warsaw (Ill.) Horticultural Society in August last is thus referred to by one who attended: "Fully a thousand people were present, including farmers, fruit growers, and many of the best citizens of this section. A table of fine fruits was on exhibition, consisting chiefly of Apples, Grapes and Plums. A beautiful feature was a large collection of flowers, arranged in the form of a rustic garden, which caused many exclamations of surprise and pleasure from all visitors. But the chief pleasures of the day were social. At 11 o'clock the assemblage was called to order by President Dennis, and after prayer Rev. H. R. Trickett addressed the assemblage upon the social problems of the day. He urged more intelligent labor, and the better education of farmers' sons and daughters, both literary and technical, that they may more properly fill all the duties of life. After the noonday feast the society was called to order, and a number of interesting papers and essays were read and discussed. The Warsaw band discoursed good music at intervals, and the exercises were further enlivened by a song from the M. E. Church choir. Altogether it was a very pleasant and profitable day, and our society hopes to have many more such annual gatherings."

On Black Walnut Culture. Before the Ontario Fruit Growers' Association, recently, Prof. Brown read a paper on the Walnut and Larch grown on the Model Farm, 850 feet above Lake Ontario. Trees of Walnuts planted in 1882 now measured twelve inches in circumference at the base. He said that trees four to six inches in circumference were worth a good deal for various purposes. He planted the trees seven feet apart each way, and thinned them out occasionally as they grew larger. He made an estimate showing that an acre of Walnuts would realize $18,350 in fifty years, being a mean annual income of $322. Mr. Beall, who has considerable experience in growing Walnuts, said that this sum was a low estimate. He once calculated the revenue obtained from a 100-acre farm, one Walnut tree being planted in each fence corner, and his estimate was greater than that of Prof. Brown. He said he successfully grew Black Raspberries six feet from the trees, and Apples twenty feet distant also flourished. Some speakers gave it as their experience that Walnut trees destroyed vegetation for some distance. Mr. Beall replied that this depended largely on the character of the soil. In his deep clay the tap root went straight down, and was as thick as the tree three feet below the ground. Dr. Burges said a tap root grew straight down in a loamy soil, and in this adjacent vegetation did not suffer much from the spreading roots.

The Summer Propagation of Roses.

[*Abstract of paper read before the Society of American Florists by President-elect E. G. Hill.*]

It is a question whether plants propagated in winter are not really preferable to those rooted in summer. I should much prefer one rooted in December which has been kept growing to one rooted six months earlier but afterward allowed to eke out a miserable existence in a thumb pot.

Many western firms resort to the frame method of summer propagation and generally with good results, although the most expert will at times suffer defeat with the finest crop of cuttings.

The Frame Method For the frame take two twelve-inch boards for the back and an eighteen-inch one for the front, making it as nearly air tight as possible to prevent a too free ingress of hot air injuring the cuttings; many persons use strips of cloth or other packing on the edges of the frame so that the sash may have an even bearing to make the frame quite tight.

Ordinary hot-bed sash are used and the frame set to face the north. About four feet above the frame make a light strip framework for supporting a canvas shade; this height allows a man to work under it, or to move the sash, with some degree of ease. Light muslin is the best canvas for shading; attach a roller and it is easy to shade when necessary.

The Bed. Use from ten to fifteen inches of fermenting material according to condition. We prefer the sweepings of horse stables, rejecting any fungus-producing material like chips or saw dust. Pack the material firmly, and upon this place a coat of air-slaked lime; sometimes several inches of fine cinders from a railroad locomotive is used on the manure to keep the sand from contact with it. The sand thus remains sweet much longer.

Use only the best and cleanest of sand; a depth of three inches is usual; tramp this solid before inserting the cuttings and let the frame stand open from 20 to 48 hours before using, allowing the steam and intense heat to pass off.

Ventilating. Some do not air, but after 15 years practice we open our sashes from six to eight inches both morning and evening and for 15 to 20 minutes each time.

Watering. Water thoroughly at the start and see that the sand is settled evenly and closely about the cuttings. For after waterings we use the hand syringe once a day or oftener; on rainy days this may be omitted; the can will seldom be necessary after the first day, if the syringing is properly attended to.

Notes. Fungoid growths are the ever-present enemy to summer propagation. Go over the cuttings every day or two and pick out any decayed stems or leaflets. As fungus usually appears next to the boards, these should have a thorough coat of lime wash. Frames lined with galvanized iron are desirable.

Cuttings. Our wood is grown under glass, and must be fine and healthy. Spidered wood or growth affected with mildew, always bring trouble in dropping leaves or black wood. We propagate all classes thus, but find the mosses are the most difficult. Many nurserymen succeed with outdoor wood, but this requires a large plantation from which to select.

Shading. Muslin on rollers affords the readiest method, and this is of prime importance for affording all the light possible for as many hours as possible, especially on cloudy days; it is an absolute necessity if the sand is to be kept pure and the cuttings healthy. The ever blooming classes will root in from 18 to 30 days, according to condition. Hybrids, Mosses and some climbing Teas require a longer time, especially if of heavy growth or a little mature.

Summer Propagating in the Greenhouse. This requires more care than winter or early spring propagation. A slate bottom, and the entire absence of wood in any shape on a bed for summer cuttings is best. An inch of clean sphagnum on the slate affords drainage; upon this place sand, and pack and water the cuttings the same as in the frame method. For shade, a better plan than light muslin tacked on the bars is to use large sheets of brown paper immediately on the cuttings, keeping this continually moistened. Any neglect in the watering will result disastrously.

Experience has shown that clean, healthy wood, taken when the flower bud is about to expand, is the best for use; this kept from wilting will generally root, while cuttings taken below this are often uncertain in summer.

The requisites of success are: A clean greenhouse, where the air is absolutely pure; clean sand; the free use of the watering can or syringe —even then certain varieties still insist on yellowing, when we may say good bye to the cuttings. Hybrids and Mosses are uncertain here, and most of them insist on a permanent leave of absence after being cared for and treated as tenderly as we may.

(*To be concluded next month.*)

Ornamentation of School Yards.

[*By C. C. Bell, before Missouri State Horticultural Society.*]

There were enrolled in the public schools of Missouri in 1881, 723,484 pupils; in 1885 there were 805,313, showing an increase in four years of 81,829. In 1881 there were employed in this State 11,659 teachers; in 1885 over 20,000. Fifteen years ago there was no such a thing as a Normal school in the State; to-day we have three. But while we have wonderfully advanced in many directions, yet we find much needed knowledge of genuine value neglected. I refer to a practical knowledge of horticulture and the ornamentation of home, public, and especially school grounds.

It is needless to demonstrate the refining and elevating influence ornamental horticulture imparts, together with the healthful exercise and pleasure it gives. That this is true is seen in the fact that some of our greatest minds find pleasure, recreation and rest in rural pursuits.

It is therefore of great importance that the young minds receive some early training in this direction, to assist in accomplishing which much may be done in our school yards, though as a rule we find them utterly neglected, and often in a wretched disorder. Too often here that which twenty-five years ago was adorned with Nature's forests has even been robbed of this, and to-day no traces of ornamentation are visible, not even the planting of a shrub. The educational training is wholly confined within the school-house, and yet the school yard seems to suggest so much of practical and useful learning.

Several years ago, while in Europe, I could but notice that while we, as a nation, excel the old world in much practical machinery and in new ideas, yet in this direction we would do well to

copy from them. There you may see, especially in Germany, not only well laid out and ornamented school yards, but garden and nursery grounds attached, where at the proper season of the year pupils receive practical lessons in horticultural work. This early training is not only healthy, but creates an early love for the beautiful and useful; it initiates the young minds into a system of industry and economy, which to all classes is very important. I fully endorse the statement made by our president—that we must see to it that every school yard in the State is ornamented—yet I am inclined to go farther and combine with the beautiful the useful. This, in my opinion, may be done by adding suitable grounds to the school houses, and introducing the proper system of training.

It can be done and should be done. A plan may be devised, connecting the practical with the ornamental, making your school yards attractive, comfortable and useful, initiating a system of economy, order, industry and cleanliness, thereby creating in the young mind a love and desire for the useful, refined and beautiful.

At the close of the address Mr. Murry stated that they adopted the plan last year of meeting at the school yard on Arbor Day and encouraging the young people to bring a tree and plant it. They now have the grounds full of trees. He thought school grounds should be enlarged while lands are cheap and accessible, with a view to the growing of flowers and other plants. The young should be brought up among trees, flowers and everything beautiful.

President Evans remarked that this society has set on foot the ornamentation of school grounds. Mr. Kern, the landscape gardener, took upon himself the laying out of the work and directing how it should be done at Warrensburg. Nurserymen contributed trees and plants so freely that they could not accept them all. Our local society ornamented their grounds last spring. I think it would be well if this society would adopt some resolution asking our State Superintendent of Schools to use his influence with the legislature to get them to pass a law giving us a little appropriation for the purpose of improving our school grounds, and to make a law requiring the school board to have some ground for the cultivation of flowers and fruits.

Mr. Goodman said it is a part of the plan of the State Society to take the lead in the matter. We expect to have a day set apart by the State Superintendent for tree planting next spring. We can lead in the work, tell the school boards what to do and how to do it.

Mr. Speer stated that the arbor day appointed by the State was entirely too late for the work. He thinks there is no school district in the State of Missouri that cannot ornament its grounds if there is just one man in that district who will make up his mind that it shall be done. It will be worth, as an advertisement, to any nurseryman all that it will cost him to furnish the trees to ornament the school grounds of his county.

An Eighty-Acre Apple Orchard.

[Abstract of paper read before the Adair County (Mo.) Horticultural Society, by Chas. Patterson.]

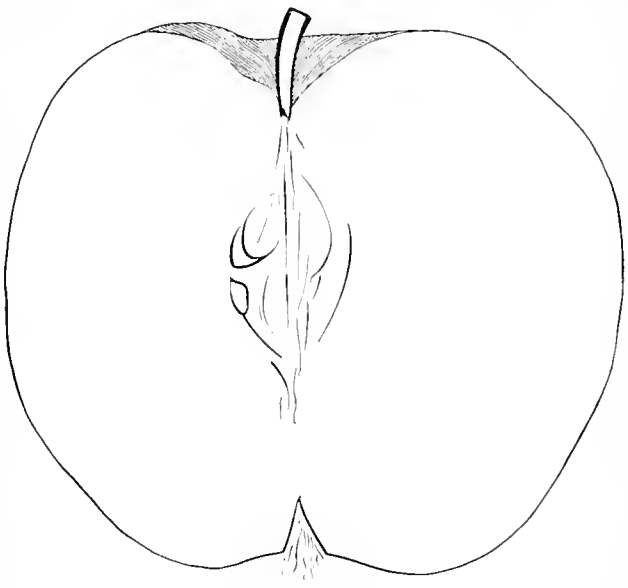
Having planted over 12,000 Apple trees on a full 80 acres last spring, I will give some of my reasons and experience to the public.

Reasons for Planting.—It is quite a general impression that when we get a crop prices barely pay for picking and hauling. Many are discouraged if we tell them to cultivate, manure and prune the orchard, dig out the borers, etc. I have been one of the first to call attention to these needs years ago, but it is very safe to assume that less than one-tenth of the present orchards will ever receive any benefits from good care, and the markets will keep being glutted with inferior and very cheap fruit, while good qualities are in demand at fair prices.

The present short crop may be an accident of the season to some extent, but we need not expect abundant crops hereafter, only in the exceptionally favorable seasons. One such crop well taken care of as I had last year on my eight-year old orchard may easily be made worth the present cost of land and trees. We have passed through a series of winters or seasons that have demolished nearly all orchards not far north of here. Mine has suffered, but with this and all other mishaps I still have 80 per cent of trees in bearing condition, and the balance coming on. Such winters may not occur again, and with the experience I am gaining, the new orchard might do even better, though some drawbacks are likely to always occur.

I allude to these things to show, if need be, that my calculations are not visionary, and that I do not expect to follow in the beaten paths of the country. If I were apprehensive of doing that, or that my sons would degenerate to it, I would pull up the last tree before spring, and perhaps plant some tough kind of forest trees that could stand such treatment.

Planting We planted the trees in rows 4 feet 8 inches apart, placing alternately midways, making each tree the centre of a hexagon and 17 feet between each tree. The intention is to cut out three-fourths of them whenever the balance will be benefited by it, which I estimate at 12 to 16 years, allowing them to bear four to eight crops, which of itself can be exceedingly good pay for all investment. The remaining trees will then be 29 feet 4 inches by 34 feet in square rows. This was an oversight in planning, as I preferred to have them alternating.



WINTER ST. LAWRENCE APPLE.

We made a two inch square pole for marking off, with inch holes through which to stick hazel pegs where the trees should stand. Two hands can run very straight between stakes at each end, but in 80 rods distance it required care to set the pegs always at the same side of the hole, and in crossing depressions and elevations we found it necessary to have cross lines of stakes as stations to verify and correct the run. We used a re-place, that is a board four to six feet long with a notch or hole in the middle to be placed at the peg, and one notch for similar pegs at each end, to preserve the place for the tree while digging.

We dug the holes full, large and deep, filled round the roots with mellow soil, tramped in as hard as possible, leaning the tree perhaps too heavy to the southwest, which is easier corrected than to straighten after leaning the other way. We then planted corn in and between the rows, and had as good a crop as if there were no trees, except that the planting of the corn was delayed in some measure on account of the tree planting.

The trees were the Ben Davis variety, it being by far the most profitable tree to plant, except about 500 Yellow Transparent, a new Russian summer apple, earlier than any we have before, and the only one of hundreds imported lately that I think valuable for this latitude.

I prepared a record book, and numbered a page for every three rows, and a line for every tree. Early in August I went to or near every tree with my book and put zinc labels on the permanent trees, with its number written in lead pencil. With these guides I can send any hand to any spot in the field, or go myself without making a mistake. In replanting I can always know how many trees are wanting in each row, and save much travel. It requires 44 miles walking to go to every tree.

The Winter St. Lawrence Apple.

[By E. W. Shepherd, Jr., before Montreal Horticultural Society.]

We have now had some experience in growing this Apple. Whether it be, as reported, an old English Apple or a Canadian seedling (like Fall St. Lawrence) may never be finally decided. It certainly shows such very near kinship to one or two of the Newman seedlings that I am inclined to claim it as a Canadian Apple.

There is no doubt, however, about its being a most valuable acquisition to our fruit list. The tree has proved to be quite hardy. On gravelly soil I have some thirty trees, planted about eleven years, not one of which shows the slightest disease or decay of any kind, while the Fall St. Lawrence in the same orchard, on the contrary, is not thriving satisfactorily.

The Winter St. Lawrence is a stout tree, having strong shoots of vigorous upright growth which ripen their terminal buds perfectly. The tree does not require much pruning, a great advantage in this severe climate, for, in many cases, disease is the effect of pruning. It bears its fruit, as a rule, on the fruit spurs of the larger branches every year, but heavier alternately.

The fruit drops less from the tree than any other variety I know of; this is owing no doubt to its stout trunk and branches, which prevent the tree from swaying about in high winds, and to its short thick stalk, which has a firm hold of the branches. This dropping of the fruit is a weak point in a commercial Apple, and discounts any advantages that there may be in the way of heavy crops. The fruit does not appear much affected by the codlin moth; perhaps its thick skin may account for this. As compared with Fameuse this is particularly noticeable.

When pulled in the fall the Winter St. Lawrence is not good for eating, but a fortnight or three weeks afterwards—about the middle or end of November—as a table Apple it compares favorably with, if it does not surpass, most varieties of its season. Carefully picked and packed, the fruit will keep, in a proper place, until the middle or end of January. It will not export in barrels satisfactorily. I should recommend packing the fruit in the Cochrane Apple-case, which avoids the squeezing which seems unavoidable when put in barrels.

I think the Winter St. Lawrence deserves to be ranked as one of the leading varieties for cultivation in this Province, both on account of its hardiness of tree and excellence of fruit. The fine appearance and superior quality of the fruit commands a ready sale at high prices.

Home Gardening.

[Abstract of paper read before the Kentucky Farmers' Institute, by W. T. Delaney.]

Chief of all things is rich ground. Some is naturally better than others, but none is ever near good enough without large additions of manure, of which horse and cow manure have no superior. Put on what you regard as an excess, then double the quantity, and if you will continue the operation every spring you will have it about right.

Where there is plenty of land, the preferable form of a garden is a long rectangle, the rows the longer way permitting of horse cultivation. Where the plat is small, necessitating cultivation by hand, it is still wise to have the longest rows or beds possible. Since even then the cultivation can largely be done by hand plows.

Be sure the garden is broken up deeply and the manure put largely near, or if very fine, on the surface. The surface ought to be worked over before planting, by harrow, rake or roller, until there is not a clod as large as a boy's marble, and no hills or ridges ought to be tolerated, even for raising Sweet Potatoes. The cultivation ought to be nearly level throughout the season.

After the garden is planted, if restricted to one tool I would choose a steel-tooth rake. Its frequent use is not only death to weeds and grass, but is the certain and efficient preparation of a well pulverized surface soil—the best mulch that can be had. Three or four minutes with a steel-

tooth rake will save the work of two or three days if carelessly left weeds be plenty, if the work be done in time.

The prevalent custom in town and country to crowd the vegetable garden with fruit trees and bushes ought not to be tolerated. The walk, rather than Raspberries, Peaches and sour Cherries, ought to be next the fence all around.

Every garden ought to have an Asparagus bed laid out and planted as soon as it is located. Then there should be English Peas, Black Wax and Early Valentine Bunch Beans, Jersey Wakefield and Flat Dutch Cabbage, Deacon Lettuce, Perfection and Acme Tomatoes, Egyptian and Eclipse Beets, Boston Market Celery, Carter Watermelon, Montreal Market Cantaloupe, Early Rose, Beauty of Hebron and Mammoth Pearl Irish Potatoes, and the Shaker Red Sweet Potatoes, these being the best of their several kinds. The old-fashioned Long Green Cucumber is the best of its kind for all purposes. The garden ought never to be found without Parsley, Mint, Thyme and Sage.

We conclude one must enjoy seeing his vegetables grow to have success. But to have a good garden its owner must look after it and take a hand himself. As a steady thing it is not for fun as good as fox hunting, but it is infinitely more so than sitting around whittling pine boxes and talking politics, and vastly more profitable, and to a professional man far better exercise than is usually sought for at much more expense.

In the fruit section, apart, there should be of red Raspberries a row of Turner and Cuthbert; of the blacks, Gregg, and our native plant to be found in the woods. Of Strawberries, Cumberland Triumph, Warren and Crescent, which last, if sour and small, is persistent and prolific.

Horticulture for Cemetery Lots.

[From a paper by John G. Barker before the Massachusetts Horticultural Society.]

The Landscape Idea. First of all, without good grass you may plant whatever else you please, and yet never have a good looking lot. Let all the ground be well prepared before sowing, to give the seed something to feed on. I know by sad experience the great drawbacks from the want of thorough preparation.

Proprietors whose lots were graded many years ago, by the men who would do it cheapest, are surprised that theirs do not look so well as many others. Now every lot in all well conducted cemeteries is thoroughly prepared before being sold. Top dressing is good, but food for the deep roots is better; a dry spell will soon convince a close observer of this fact. By all means let us have good grassing.

Happily many of the old unsightly hedges, fences, and granite curbings that formerly were permitted to surround the lots, are giving way, each year, to grassy slopes and rare trees and shrubs; so that in this modern style the views of the founders are becoming realized. It is not until a few years ago, comparatively speaking, that the landscape lawn plan has been carried out.

What to Plant. Not long ago a lady, who owned a small lot, said to me: "I want some shrubs, or plants, or both, on my lot; what do you advise?" In the center was set a weeping Kilmarnock Willow (which can be easily removed if a monument is erected), and on each front corner a plant of *Yucca aloifolia;* with a Spiræa and a Hydrangea placed near the back corners. Properly cared for, this simple arrangement will look well for years to come.

I do not advise flower beds on lots, although many wish for them, but do think a good-sized vase, well filled, and placed in the center of the lot (especially where there is no monument), is very desirable. Larger lots will admit of more extended work; but still the principles are the same. We must aim to attain all the variety we can in embellishment, and yet strive for an effect of neatness and simplicity; anything like ostentation is entirely out of place.

I can show you a beautiful vista where once was an assemblage of unsightly hedges and iron fences, with ragged banks and terraces, half dead trees and scraggy shrubs. We now have there a range of well kept lots, with vases and beds of flowers, and choice trees and shrubs; the whole area is a pleasure to all, and not one of the several proprietors would restore its former condition on any account. It took time of course to accomplish this result.

On the larger lots, of a thousand or more square feet, a good way is to form a circle, described about the center of the lot. This will leave spaces in the front and back corners, which may be planted, if you please, with Cut-leaved Birch on the back corners, *Deutzia gracilis* in the front, or *Yucca aloifolia*, or anything to suit your taste, if not of too strong growth; place a tree in the center, to occupy it until you are ready with your monument.

The planting of trees and shrubs, in the cemeteries of which I have charge is controlled entirely by the trustees; and with "perpetual care" there is no reasonable objection to this restriction. Large trees are not planted on the avenues, but only between the lots, on the back of the front row. If you adhere to the the landscape lawn plan you can keep all unpleasantly distinctive lines out of sight.

In suitable spaces I recommend a free use of shrubs and herbaceous plants. I would never plant very close, but would let each have room to show what it is. I believe in massing the different kinds, but not in swamping them. But before any kind of planting is done, prepare your beds in the best possible way—it will pay to do it; and if you do not, disappointment will be your doom.

I have one ornamental piece, on a flat surface, seen on all sides. It is broad in the center, and comes to a sharp point at either end. In the center of the piece a *Salisburia adiantifolia* is planted, and at each of the ends are six or eight plants of *Yucca aloifolia*. On the edges between the Yuccas at each end is a row of low-growing Phloxes—all seedlings. The spaces between the Phloxes on the sides and the Yuccas at the ends are filled in with *Hydrangea paniculata grandiflora;* the whole forms a very satisfactory bed.

Another prominent corner, of good size and triangular in shape, is planted as follows: At the point on the back, about thirty feet from the avenue, is a very fine specimen of *Virgilia lutea;* half way between this and the avenue is a Kilmarnock Willow, grafted high. Between these, and bordering the two sides, are Spiræas, Weigelas, *Deutzia scabra* and *D. crenata fl. pl., Forsythia viridissima*, and *Hydrangea paniculata grandiflora;* and on the front *Deutzia gracilis;* these are all grown as specimen plants and they barely touch each other. A circle of five feet is kept open around each, and the grass spaces are cut at the same time with the lots on each side. I assure you this is a very satisfactory group.

I would plant single specimens of both trees and shrubs wherever there is space for them, if the condition of the treasury will permit. Do not be discouraged if you cannot set them all in one season; keep at it—plant some every year. Don't put them in hap-hazard; look out for effect, and get all the pleasing vistas you can; and you will be surprised to find what a few years of steady, persevering, faithful work will do.

Successful Pear Culture.

[From a paper read by John Pierce, before Miami County (O.) Horticultural Society.]

The Pear, according to Downing, is undeniably the favorite fruit of modern times and modern cultivators. A native of Europe and Asia, it has on our continent found a soil adapted to its growth and a climate calculated to more fully develop the fruit.

The Pear is said to have been known to survive 500 years and to attain to an enormous size. The great Pear tree of Heretordshire, England, shades half an acre and has produced in one season 300 bushels of fruit. A famous tree near Vincennes, in our own country, at the age of forty years, produced 180 bushels of fair fruit. The Pear is not only profitable as a fruit tree but the wood is fine grained and heavy; Yankee ingenuity has succeeded in making of it a fair quality of ebony.

The soil for the Pear should preferably be a tolerably heavy clay loam, with clay subsoil, although it will succeed in a greater variety of soil and climate than any other cultivated fruit.

The selection of varieties should be determined by the object for which we plant. If for market I would plant few varieties; say Madeleine, for very early; Bartlett, Duchess, Beurre d' Anjou, and Lawrence. If for home use I would plant about as follows, named in the order of ripening: Madeleine, Tyson, Bartlett, Sheldon, Seckel, White Doyenne, Duchesse, Beurre d'Anjou, Lawrence and Beurre Easter, or some other late variety. This will give an abundance of choice fruit through the season.

If possible, go in person to some reliable nurseryman, take two-year-old trees, none older; select good, stocky trees, have them taken up in your presence and immediately mossed, that the root may not dry, for therein lies the length of life and thrift of your tree.

The ground having been previously prepared by deep plowing in the fall, turning under a liberal supply of manure, and marked twenty-five feet each way, dig two feet square and one and a half feet deep, fill with rich loam to the proper depth to receive the tree, which should be a very little deeper than it stood in the nursery. The soil should be tramped well around the roots and watered, if dry; then two inches of dry soil should be put on top.

The soil should be carefully cultivated for a few years, or until the trees commence bearing. Then, with an occasional top-dressing, they will be able to care for themselves. In closing, I must add that most varieties are better if ripened in the house, especially the later sorts, although there are exceptions to the rule.

The Philadelphia Chrysanthemum Show.

Competent judges who were in attendance at the great Chrysanthemum Show of the Pennsylvania Horticultural Society in Philadelphia, held Nov. 8th to 11th, were not slow to pronounce it the best show of its kind ever held in America. And among such judges must be included the numerous visiting florists from New York, Boston, and elsewhere, men who have themselves helped to make many a successful show.

The most conspicuous exhibit was that of Craig & Bro., and which received the award of the grand prize of $200. This exhibit consisted of a collection of 25 plants in as many varieties. The other entries for the prize were the following, to which fell the premiums connected with their names respectively: 2d Wm. Dewar, $150; 3d John Shaw, $100; 4th John Kinnear, $50; specials—W. K. Harris, $40; Fred. Muller, $25; Karl Muller, $20.

In the Nurserymen's and Florist's Class the following were the exhibitors with the rewards respectively: Six standards in 6 varieties, Craig & Bro. Six yellow, 6 varieties, W. K. Harris. Six white, 6 varieties, W. K. Harris. Twelve, one of a kind, W. W. Coles, J. W. Colflesh, Fred. Muller. Twelve Japanese, one of a kind, J. W. Colflesh. Twelve Chinese, W. K. Harris. Specimen plant, white, W. K. Harris, W. W. Coles. Specimen plant, yellow, W. W. Coles, 3d W. K. Harris. Specimen plant, any other color, W. K. Harris, W. W. Coles. Specimen standard, Craig & Bro. Six single flowering, 6 sorts, 3d W. K. Harris. Seedling plant, W. C. Pyfer, W. K. Harris. Three specimen plants, 3 distinct colors, W. K. Harris, W. W. Coles.

Special prizes were awarded as follows: The Wooton prize—4 Chinese, 4 varieties—John Shaw, silver cup. The Pembroke prize—4 Japanese, 4 varieties—W. Dewar, silver cup. The Red Leaf prize—3 yellow, 3 varieties—W. W. Coles, $15. The Sunnyside prize—best seedling never before exhibited—W. K. Harris, silver cup; Ch. W. Trotter, silver medal; H. Surman (E. W. Clark) silver medal; J. W. Colflesh, bronze medal. The record prize—6 plants grown without disbudding—Thos. Eoulds (Mr. Singerly, Sr.), $25. Collection seedlings not less than three plants, 1st H. Surman, 2d R. Carey; special, R. Carey, bronze medal.

In the Amateur Class there were many exhibits, and these naturally attracted much attention from visitors. The display of cut flowers and floral designs, both in the line of Chrysanthemums and of other flowers, was large and attractive. The floral stork stationed at the entrance as if extending a greeting to the multitudes of visitors, and the pleasing fence made of Chrysanthemums, were a fitting introduction to the grandeur within horticultural hall on this occasion.

Identification of Varieties of Hardy Orchard Fruits.

(Continued from page 34.)

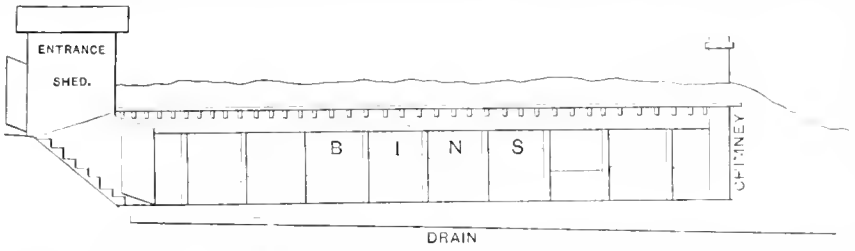
The Peach is a fruit of plainly separated strains or races. We all know the distinctive type called Indian, with its peculiarly brownish and striped fruit and dark colored twigs. The Spanish and Chinese strains, now coming into successful culture in the South, where our common varieties of the Persian stock fail, have their own peculiarities of tree and fruit. All kinds easily divide into clings, semi-clings, and freestones.

IN FORM they are either round, oblong, pointed, like Heath Cling, or unequal. A crease or suture running parallel to the edge of the stone is found

in greater or less degree in all specimens, and is worthy so far as it differs in varieties.

In color the Peach is much more constant than the Apple. It is greenish, cream-colored, white, yellow, red, or blushed, mottled, specked and striped with carmine, in all possible tints and shades. The color of the flesh corresponds quite well with the ground color of the skin. In texture it is firm and inclined to be tough, or like Lonise. Some kinds are very dry and mealy, and others dripping with juiciness.

Another reliable mark is the color of the flesh at the stone. The variety called Snow has no tint of red even there. But a great many kinds are red or pink, with either white or yellow flesh.



ROOT-CELLAR OF THE IOWA AGRICULTURAL COLLEGE FARM: LENGTHWISE SECTIONAL VIEW.

The stone itself is plump and short (in Peen To about the shape and size of a very round Hazelnut), or long and pointed, and very coarsely corrugated and apt to be split. The seed of Morris White appears as if it had been mashed at the base between the thumb and finger while soft. All of the Indian class have the point turned to one side or hooked.

The downy covering of the skin differs in length and quantity and when entirely wanting the varieties are called Nectarines. In my experience I have grown Nectarines from Peach seeds.

The Plum is represented in our orchards by at least five distinct species. The form in all is the best key to identity. Nearly all have a suture, and in some cases it is very marked.

All are characterized by a smooth surface, covered with a bloom, which varies in thickness, except Prunus Simoni, of probable Asiatic origin, and P. glandulosa, which two species are somewhat pubescent, like the Apricot.

The flesh of all kinds is yellow or green of different shades, except a few Japanese varieties that are red to the stone.

The character of being cling or freestone is as dependable as in the Peach. The length of the stem is with the Plum quite constant. Some have very long and others very short stems. The character of its attachment to the fruit is variable.

The color of the skin is from pale whitish yellow to yellow, green, pink, red, purple, blue, and black. Our native species have all of the red and yellow colors, but none of the green, blue, or black so far as I have seen.

The varieties of *P. chicasa* seem to have a habit of being earlier in their season of ripening than *P. Americana*. Wild Goose a good example of the former, and Miner of the latter. Kelsey's Japan is remarkable in size and shape of the fruit, being as tender as the Fig, and its leaves and branches differ from other cultivated kinds.

The Cherry. Downing divides them into two classes, the first of Hearts and Bigarreaus, and the second, the Dukes and Morellos. The former is characterized by a heart shape, a mild or sweet flavor, and rather firm flesh. The color of the Bigarreaus is usually quite fair. The latter class has an oblate form, is never pointed, and the flavor is from a pleasant tart to a sharp sour.

The Cherry usually has a suture, but sometimes a welt in place of it.

The color of the skin is from white to black or nearly so. Nothing short of extended experience will enable one to determine the exact color which belongs to a variety. Even then, no one can distinguish all. The flesh in point of color is very nearly like that of the skin. The shape of the seed corresponds with the shape of the fruit in a great measure. The length of the stem does not vary greatly. The depression at the base of the stem is not plainly contrasted.

The Apricot reproduces from seed with comparatively little variation. Their general contour is round, with an occasional elongated or compressed form. A well marked suture is peculiar to some kinds, and others have none. The pubescence is universal and never thick.

The shape of the stone is a very good point of recognition, as some are nearly round and others broad and flat. The taste of the kernel is a reliable index, as some are bitter, and some as sweet as an Almond.

The color is yellow, orange, or a rich cream, with an over-color of red, which sometimes darkens into brown. Many varieties are delicately marked with crimson and purple dots, and small specks.

The flesh is usually melting, and colored a little deeper orange or yellow than the skin. It is almost free from any inclination to cling, and not red at the stone like the Peach.

The bearing quality of the tree is, through a series of years, a help in making out its varieties, and so is the style of the tree and twigs, and the color of the bark. What is known as the quality of a fruit is gauged largely by the taste of the eater; but it ought, however, to give some idea of the variety. The peculiar flavor of a Westfield, or an Esopus, is apt to be remembered.

FROM VARIOUS SOURCES.

A Model Root-Cellar. It was built by Prof. Knapp, on the Iowa Agricultural College Farm. An excavation was made 14 feet wide by 48 feet long and 6 feet deep, and the sides and ends were walled up with brick. A drain was laid a foot or so under the floor, and running out at the back end and to a hollow below. The floor is brick; a chimney provides ventilation at top and bottom. A door-way 4 feet wide was made at the front with double doors at the bottom, also slanting doors at the top of the steps. Plates which bear the roof rafters were laid on the side wall, and also on posts each side of the center aisle. Earth two feet deep covers all. The inside is divided into two rows of bins, with an alley-way 4 feet wide between. The bins are 4 or 5 feet each way, and are partitioned off by boards nailed to the posts. In front loose boards keep the roots in place. At first the roots were placed upon the brick tiled floor, but it was found preferable to put movable floors in the bins, a few inches above the bricks, giving access to air and keeping the roots dry. If the timbers are all well soaked with hot tar, and then occasionally whitewashed, it will last many years, and is a safe and convenient arrangement for keeping Potatoes and other roots. If entered from the barn or stable, roots could be fed to stock with no trouble.—Prairie Farmer.

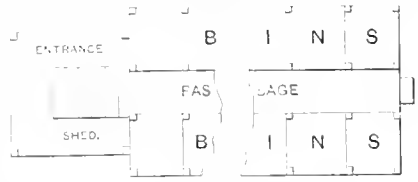
A great place for Celery. It is in and around the fair and far-famed city of Kalamazoo that the Celery lord, with all his innate pride and odor of garlic, may best be found. Here his coat of arms, consisting of a bunch of Celery penchant on a silver dollar guardant, may be seen emblazoned on his armorial bearings and also on the faces of the shopkeepers. Here it is that over 3,000 acres of "reclaimed" land is devoted to the cultivation of the crisp and toothsome stalk that is gifted with nerve strengthening properties. In spite of the fact that Kalamazoo leads the country in light vehicles, wind mills, harrows and many other branches of manufacture, she still pins her faith and hope and trust to the Celery lands and the Celery lords.—Chicago Herald.

Protecting Peach Trees. Energetic cultivators in the Northwestern States grow superior Peaches every year by giving winter protection. Two methods are noted. In one, the trees are planted in a sloping position and trained to a flat, or fan-shaped form. Late in autumn the branches are bent down and covered with corn-stalks, which, by retaining the warmth from the soil, prevent hard freezing. The other method is to plant the trees at the base of a steep slope or high bank, when, by training in the same manner, the branches may be laid over against the bank, and covered as above noted. The expense of covering is slight as compared with the value of a fine crop of Peaches.—Country Gentleman.

Grafting Pears on Apples. We have received specimens of a Pear from a tree which was grafted accidently on an Apple ten years ago. The Apple is Lord Suffield and the Pear Paradise d' Automme. The union between the scion and the stock we are assured is perfect; and we can testify to the specimens of both kinds of fruit being perfect in development and excellent in flavor. Such an example of Apples and Pears growing on the same tree we have never known before, and the skeptical may probably smile at the announcement. We have in years gone by tried many experiments in the way of inter-grafting, but never succeeded in obtaining a union between the Apple and the Pear which lasted longer than two or three years, the Pear scion having always died or been blown off by the wind. The experiment of grafting the Pear on the Hawthorn has been often made and made successfully, some varieties thriving even better on the Hawthorn, in some instances, than on the Quince or the Pear stock; but such an instance as this is new to us.—London Journal of Horticulture.

Poverty Stricken Gardens. How strange that with the great wealth of easily grown, inexpensive material which is possessed in the hardy flowering shrubs as home-adorning material anything like fair collections of these should be so rarely met about American country homes. Shrubbery groups are among the most fascinating and ever-changing plant adornments that can possibly be employed on the home grounds, and the shrubs are no more trouble than the same number of Currant bushes. Here is a list of what we consider the best hardy flowering shrubs for common culture. *April Flowering.*—Mezeron Pink, (*Daphne mezerum*); Golden Bell, (*Forsythia*); *May Flowering.*—Japan Quince, (*Pyrus*); Flowering Plum, (*Prunus triloba*); Flowering Almond, (*Prunus*); Thunberg's Spirea, (*Spirea Thunbergii*); Plum-leaved Spirea, (*Spirea prunifolia*); Lilacs, many sorts; Rough-leaved Viburnum, (*V. rugosum*); Lantana-leaved Virburnum, (*V. lantanoides*); Bush Honeysuckles; Tree Pæony. *June Flowering.*—Silver Bell Shrub, (*Halesia*); Lance-leaved Spirea, (*S. lanceolata*); Josika's Lilac; Garland Mock Orange, (*Philadelphus coronarius*); Double flowering Mock Orange; Large-flowering Mock Orange, (*P. grandiflorus*); Dwarf Snowball, (*Viburnum plicatum*); Graceful Deutzia, (*D. gracilis*); Double Deutzia, in several varieties; Weigela Rose and varieties; Red Branched Dogwood; White Fringe, (*Chionanthus*). *July Flowering.*—Alder-leaved Clethra, (*C. alnifolia*); Billiard's Spirea, (*S. Billardi*); Fortune's White Spirea, (*S. callosa alba*); Fortune's Spirea, (*S. Callosa*); Japanese Spirea, (*S. species Japonica*); Oak-leaved Hydrangea, (*H. quercifolia*). *Flowering in August and later.*—Altheas, Double and Single, (*Hibiscus*); Large-panicled Hydrangea; Purple Fringe, (*Rhus cotinus*); *Variously Attractive.* Money-wort-leaved Coteneaster, handsome fruit. Prunus Pissardi, beautiful dark red foliage, all seasons; Purple-leaved Berberry, violet purple foliage; Variegated Cornelian Cherry, handsome white-blotched foliage; Silver-leaved Corchorus, white-edged foliage; Holly-leaved Mahonia, evergreen; Box, in varieties, evergreen.

Flues for Heating. A. W. M. speaks about Roses, Palms and Ferns in houses heated by flues. I have not yet seen better Roses grown in houses heated otherwise than those seen some years ago where I served my apprenticeship, mostly Hybrid Perpetuals, forced in pots for sale and to cut flowers from; and there always remarkable success with them. It has never been my pleasure since to see such clean and healthy looking plants. I have had some experience in the same way recently, having myself been obliged to grow Roses in houses heated by flues. Our most successful Rose grower here in St. Paul has grown splendid Roses in houses heated that way. As



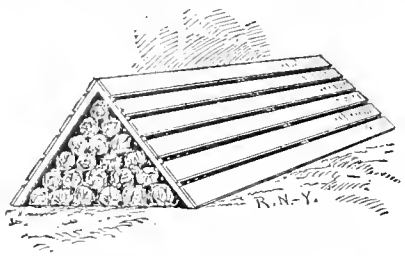
Floor Plan of Root-Cellar.

good results may be obtained in flue-heated houses as in any other, of course this where good flues only are used—not poorly built smoky affairs. The most important point with flues is to supply with the heat a sufficient amount of moisture. This may be secured by keeping water on the flues in shallow pans of zinc or galvanized iron.—American Florist.

Sweating Apples. Many allude to sweat on stored fruits as something that comes from within the fruit, and which is to be regarded as a natural or necessary exudation. There is no such process as sweating in fruits. When men or animals sweat, they become covered with moist-

ure passing through the skin; when an Apple becomes covered with moisture it is due to condensation of moisture from without. The skin of a sound Apple is practically a protective covering, and designed for a twofold purpose: First, to prevent the ingress of air and moisture to the tender cellular structure of the fruit; and second, to prevent the loss of juice by exudation. Apples taken from trees on a cool day remain at the temperature of the air until a change to a higher temperature occurs, and then condensation of moisture from the warmer air circulating around the fruit occurs, just as moisture gathers upon the outside of an ice-pitcher in summer. This explains the whole matter; and the vulgar notion of fruits sweating should be dispelled from the mind. It is almost impossible to gather Apples under such conditions of temperature that they will not condense moisture after being placed in barrels. It would be better if this result could be avoided, as dryness of fruit is essential to its protracted keeping. In our northern autumns the days are hot, and the nights cool, and this favors condensation. Apples picked on a moderately cool day, and placed in a moderately cool shed, protected from the sun, will not gather moisture, and this is the best method to pursue when practicable.—Popular Science News.

Burying Cabbage. The figure following shows how Mr. E. L. Denslow, of Ashtabula Co., Ohio, stores Cabbage for winter as described and illustrated recently in the Rural New Yorker. A pit eight inches deep and three and one-half to four feet wide and of the proper length is first



An Ohio Method of Wintering Cabbage.

dug, and boards or slabs are placed at the bottom The Cabbages are cut and well trimmed and packed in the pit, as shown. Frames of 2 x 4 inch scantling are made and placed upright in the pit. For a pit 15 feet long three of these are needed. Fence boards are nailed to these frames, thus forming a complete crate. This is covered lightly with straw and then with about four inches of dirt. The ends are stuffed with straw, which can be removed whenever Cabbage heads are desired.

Plants for Unheated Glass Houses. Those who have only unheated houses or pits have to be careful in their selection of flowers. It is useless trying to get plants here during the darkest period of the year that require artificial heat to enable them to do so. There are, however, some exceptions to the list of heat-loving plants. First on the list may be named the Chrysanthemums, they only need the protection of a glass roof to flower them in the greatest perfection, and by growing some of the latest blooming section a succession may be kept up till Christmas, and later. The Crimson Flag Schizostylis coccinea is also a real gem for the cool-house. It begins to send up its brilliant scarlet flowers in October, and continues for months. Lifted from the open ground in October, and planted in a cold grapery they will flower the whole winter through, and may be planted out again in March under partial shade. They also make excellent pot plants. The early winter-flowering Bulbous-Iris, *Iris reticulata*, has a great future in store for it, its blooms being of the most lovely purple imaginable, prettily streaked with orange, a fitting companion for the most costly Orchid. If potted in August or September it will be in full bloom in January. I put three bulbs in 4-inch pots, and five bulbs in 6-inch pots. Anderson's Speedwell, *Veronica Andersoni*, only needs the protection of glass to insure its flowering freely throughout the winter, producing purple blossoms. The common Christmas Rose, *Helleborus niger*, and its varieties, although often blooming in the open air are vastly improved under glass, as alternate frosts and thaws spoil the purity of their flowers. The Laurustinus is a really good cold-house plant, its blooms being much whiter under glass than out-of-doors. Erica hyemalis and others of that type dislike fire-heat in any shape, and are much more lasting in cold than in hot-houses. Other useful plants might be mentioned, but the above cannot fail to please.—Gardening Illustrated.

THE CULINARY DEPARTMENT.

Jellies. Put a buttered paper, butter side down, over them to keep from molding.—Farm Journal.

All Canned Fruit should be kept in a cool dry and dark place, or wrap the jar in paper, as all fruit keeps the color and flavor better if each jar has its paper wrap.—N. Y. World.

Fried Squash. Pare the Squashes and slice thin, let them lie in cold salt water one hour, then dry in a towel, roll in flour and fry in boiling lard. Pepper them when laid on a flat dish.

Apple Tarts. Pare, quarter, and boil in half a cup of water, ten large tart Apples; beat until smooth; add three beaten eggs, one grated lemon, half a cup of butter, one and one half cups of sugar; beat all together; line patty tins with a puff paste and fill; bake in a hot oven five minutes.

Quinces baked with the skins on are delicious when served warm; put one on a saucer at each plate. If mashed with a knife, the core is easily removed; then put on a little butter and plenty of sugar. In baking the quince loses the strong taste which is disagreeable to many, and retains a delicious flavor.—Practical Farmer.

Warmed-Over Potatoes. Fry a sliced Onion in a spoonful of butter, then push the Onion to one side of the spider, put in two spoonfuls of flour and stir until brown; pour in a cup of milk and rub until smooth and add milk until of the consistency of gravy; season to taste, then pour in a plateful of sliced Potatoes, cover, and keep on the top of the stove until hot.

Beet Salad. Place boiled beets in steamer over kettle of water until warm, then slice and cover with following dressing: Two-quart bowl of sliced Beets, three tablespoons melted butter, salt, pepper and mustard to season rather sharply, and seven tablespoons of vinegar. Cover bowl while warm and place in cellar or refrigerator to cool quickly as possible. A very nice salad.

Mushroom Catsup. Get fine grown Mushrooms, break them up, sprinkle a good handful of salt over each layer. Let them lie for all the juice to run out, stirring them often, but put no water; then strain and boil with a very little ginger and pepper. It is a mistake to give Mushroom catsup all kinds of flavorings, as it is its own flavor which is all important to retain.—Farmer's Advocate.

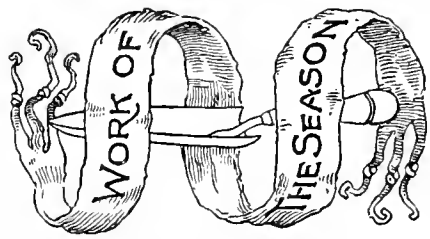
Apple Marmalade.—Take nice sound Russet Apples, pare and core, cut in small pieces, and to every pound of fruit add one pound of sugar; put the sugar to boil, with just enough water to dissolve it, into a preserving kettle, add one large Lemon to every four pounds of fruit, boil all together until the syrup gets thick, then add the Apple and boil until it looks clear. This is fine half Quince half Apple.—American Cultivator.

Tomato and Rice Soup. Three pounds of Tomatoes, two teacupfuls of rice, one and one-half ounces of butter, two ounces of Onion, two quarts of water, salt to taste. Brown the butter, put in the Onion cut into small pieces, and fry till tender, pour on the water (boiling), add Tomatoes, and stew gently 10 minutes, after which add the rice and let the whole simmer about 20 minutes. Do not cook longer, as the grains of rice must be kept whole.—L. D.

Cranberry Sauce. Pick over and wash the berries, and put in the preserving kettle, with half a pint of water to one quart of berries; now put the sugar—granulated is the best—on the top of the berries; set on the fire and stew about half an hour, stir often to prevent burning; they will not need straining, and will preserve their rich color cooked in this way. Never cook Cranberries before putting in the sugar. Less sugar may be used if you do not wish them very rich.

Cauliflower left from dinner, if warmed with mashed, or fully boiled Potatoes, is an excellent breakfast or luncheon dish. Chop equal parts of each; add a spoonful of butter, and two or three spoonfuls of the white sauce that you have served with it; season nicely, and warm in a saucepan, stirring until it leaves the bottom and sides of the vessel. If there is no sauce, use enough milk or cream to moisten it. A little cayenne for seasoning.—Country Gentleman.

Pickled Pears. Ten pounds of Pears, four and one half pounds of sugar, a half an ounce of whole cloves, three pints of vinegar. Remove the peel from the fruit, leaving on the stems, and press into each Pear one or two cloves, according to its size. Bring to a boil the vinegar and sugar, skim, and cook the Pears in the syrup until a broomcorn will penetrate them easily. I boil mine about 35 minutes, then fork them into a stone jar; boil the syrup a few moments before covering the Pears.—Mirror and Farmer.



PREPARED FROM DIARY NOTES BY CHAS. E. PARNELL, QUEENS, N. Y.

HOUSE PLANTS.

Abutilons. Blooming plants and those whose pots are well filled with roots like liquid manure at times. Young plants to be shifted as required. Pinch for securing bushiness. As there are cuttings, propagate.

Agaves and Aloes. Keep rather dry and at about 40° to 50°. Sponge off the dust, etc.

Ageratums. Nip back leading shoots and turn the plants occasionally. Give liquid manure at times.

Air should be freely given on all favorable occasions, but carefully avoid drafts. Aim for a uniform temperature. Favor those requiring the most light and heat.

Aspidistras. Treat as directed for Azaleas.

Azaleas to be well supplied with water at the roots, and the leaves sponged off occasionally.

Bambusa, Argentea striata, and Fortunei variegata, are excellent house plants when grown in small pots. They should receive liquid manure occasionally.

Begonias. The flowering section to have a light sunny situation, and 55° to 60° of heat. Plants out of bloom will bear partial shade.

Callas will now require an abundance of water. Sponge off the leaves at intervals. Young plants coming on to be promptly repotted as required.

Cobæa scandens. Encourage growth by occasional liquid manuring. Guard against its enemy Green-fly.

Cyclamens to be well supplied with water while in bud and bloom. Sponge off the leaves carefully at times, and keep close to the glass.

Farfugium grande. When in a state of slow growth to have the supply of water somewhat reduced. Keep free from dust, insects, etc. Light soil.

Geraniums. Those that are blooming to be well supplied with water at the roots. Plants being wintered over to be kept cool and dry, to prevent damp.

Ivy. As the beauty lies in the leaves, keep them as fresh and clean as possible.

Lantanas. Guard against Red Spider, the worst enemy. Give a light place, with about 55° of heat.

Lophospernum scandens. Treat like Cobæa. If flowers are desired, don't give too large a pot.

Mahernias. For bloom these plants require a light, sunny situation from now on.

Moon Flower. Keep growing, and clean off Red Spider, Green-fly, etc. Excellent for the window.

Othonna crassifolia. Water carefully to avoid injury from damp. Give a light, rich soil, and a temperature of 50 degrees.

Peristrophe. Limited pot room and a full exposure to the sun are necessary to develop variegation. Give liquid manure at times to pots filled with roots.

Pilea muscosa. Treat as advised for Othonna.

Pittosporums. Keep cool and rather dry, otherwise treat like Ivy. Excellent for north or east windows.

Plants placed in cellars for the winter to be examined occasionally. Guard against damp, but do not permit them to shrivel or dry up.

Rivina Humilis. Keep in a light, sunny situation, and at a temperature of from 55 to 60 degrees. Avoid extremes of heat.

Sansevirea Zeylanica. Treat as advised for Agaves, except to increase the temperature to from 55° to 60°.

Saxifrage sarmentosa. Treat as advised for Oxalis.

Sempervivums. Treat as advised for Agaves.

Water from now on should be applied in the mornings. Let it be of the same mean temperature as the air in which the plants are growing. Never give a little; rather give none until the plants are dry enough to need it, then let it be done thoroughly.

LAWN AND FLOWER GARDEN.

Clematis. Spread several forkfuls of good manure over the roots. Lay the plants down and protect with Evergreen branches.

Evergreens and shrubs often suffer from snow accumulating on them. Promptly shake such out.

Hardy Herbaceous Plants. Protect by covering several inches deep with straw or salt hay. Secure by Evergreen or other branches.

Lawns will be greatly benefited by an annual heavy dressing of well decayed manure, that two years old and pulverized as fine as possible being preferred.

Leaves may be gathered and secured for future use at any time before snow.

Movable trellises, stakes, plant supports of every kind, to be sheltered, repaired and repainted.

Roses of the Bengal and Bourbon classes, and the stronger growing varieties of the Teas, may be pro-

tected by bending over and covering with soil, while the hardy Hybrid Perpetuals can be given a good dressing over the roots of half decayed manure.

Rhododendrons. The newer plantings can be treated as advised for Hybrid Perpetual Roses, and may have Evergreen branches placed around them, the butts being set in the ground and the tops secured by stout twine, with a view to shading from the sun.

Shrubs that have grown but little during the past season to be given a coat of well decayed manure before snow falls.

Trenching. All new beds, as well as those that have been used for years, will be greatly benefited if deeply trenched. This is work for late Autumn.

PLANT CULTURE UNDER GLASS.

Acacias. Neglect of free watering will cause the loss of both foliage and flowers. Seeds may be sown to increase the stock; shift young plants as required.

Acalyphas. Guard from red spider. To have these do their best, from now on give them a temperature of from 55 to 60 degrees, with full exposure to the sun, and liquid manure at times.

Adiantums require a warm, moist situation, and a temperature of 55 to 60 degrees. Young plants to be shifted on as soon as their pots became filled with roots. To ensure success keep in constant growth.

Alocacias, such as Jenningsii, Metallica, etc., will now be in a state of rest. Don't permit them to become absolutely dry at any time. A. arborea at all times should be given a warm, moist atmosphere, and liquid manure freely if fine specimens are desired.

Allamandas. When growth ceases withhold water somewhat for a little rest. A. nerifolia will flower right on until spring in a light, sunny situation, with 60 degrees of heat, and liquid manure at times.

Anemone Japonica. As the flowering of indoor plants ceases, remove to a cool cellar, or place underneath the shelf; water sparingly from now on.

Azaleas. Forced plants to have as soon as in full bloom a cool, dry atmosphere. For succession others should be given a warm situation. The remainder of the stock to be kept in a cool, airy part of the house. Young plants to be pushed forward as rapidly as possible by giving them a warm position. Keep them free from thrip and red spider.

Bignonia venusta. Give liquid manure at times.

Bulbs, such as Hyacinths, Tulips, Crocus, etc., to come into heat in a light sunny situation and at about 55 degrees. Air freely on all favorable occasions.

Carnations. Air freely on all favorable occasions, syringe occasionally and also treat to liquid manure, but avoid keeping too wet at the roots.

Camellias. Plants not in bloom to be syringed twice a week. Guard against extremes in watering and temperature to avoid the dropping of buds.

Centradenias. With indications of bloom, place in a light situation, giving liquid manure at times.

Chrysanthemums. As soon as they cease blooming cut down and place in a dry cellar, watering sparingly here. See that the labels are properly secured.

Clerodendron fragrans to be given a temperature of from 55 to 60 degrees, with liquid manure occasionally. Kinds in a state of rest to be kept dry at the roots.

Crotons. Let them be kept carefully sponged off.

Daphne. Treat according to directions for Camellias.

Deutzia gracilis. A few plants may now be given a light sunny situation for early blooming.

Dicentra spectabilis. Treat as directed for Deutzia.

Francisceas. As growth commences give warmth and moisture, syringing gently three times a week. Young plants to be shifted on before growth commences.

Gloxinias required for early blooming may be started about the end of the month.

Heliotrope. Encourage the production of flowers by giving a warm, moist atmosphere and liquid manure.

Insects require attention to keep in subjection. Fumigate twice a week to destroy Aphis or Green Fly. Syringe freely to keep down Red Spider. Mealy bug and scale to be removed by washing. As Slugs feed by night they may be captured by the aid of a lantern.

Mignonette. Blooming plants to be given a light, sunny situation and liquid manure at times.

Orchids. *Ærides odoratum,* and other varieties, should be placed in the warmest part of the house, selecting a moist, shady situation. Do not permit them to become dry at the roots. Orchids in general require close attention. Those inclining to grow should be given a warm, moist situation. Those at rest to be given a cool atmosphere of not less than 50 degrees.

Palms to be thoroughly watered as required. Never letting them get dust dry, as some do.

Pelargoniums. Give a night temperature of 45 degrees. Keep rather dry, and as growth commences train out the shoots so as to obtain bushy specimens.

Primulas should be carefully watered during dull, damp weather. To water overhead will cause the plants to rot off. Air freely with the opportunity.

Roses. Encourage the blooming plants by gentle daily syringings and giving a night temperature of from 55 to 60 degrees. Keep down all insect pests. Such as were lifted in September may now be pruned and brought in. Syringe daily until growth commences.

Stocks. Winter Flowering and Ten Week require a sharp eye to guard against damp and Green-fly. Remove all decaying foliage, fumigate freely and scatter tobacco stems among the plants, renewing frequently.

Thunbergias. Syringe freely to keep down Red Spider. Blooming plants to have a temperature of about 55 degrees.

Verbenas. Keep in a cool airy place. They like free watering; not overwatering. Cuttings may be put in.

Violets. Stir the soil at times; remove all decaying leaves and air as freely as is safe.

FRUIT GARDEN AND ORCHARD.

Bark. Moss or vermin on the bark to be dispelled by a wash of lime, soot and clay applied with a brush. Work the brush upwards, for if the reverse many fruit spurs may be destroyed.

Cuttings of Grapes, Currants and Gooseberries should be protected, if not already done, by well covering with branches of evergreen trees.

Fruit. Endeavor to keep the fruit room at a temperature of from 35 to 40 degrees. Ventilate whenever the opportunity offers, and keep a sharp eye for decaying fruit. Carefully assort and market Pears as soon as they show indications of ripening.

Grape-vines. If not already pruned, finish immediately. Secure the vines and don't let them beat around in the wind. The vines will do better if they can be laid down and treated as advised for Raspberries, although this is not absolutely necessary.

Manuring. All fruit trees will be materially benefited if given a light dressing of well rotted manure every season. Now is an excellent time for applying.

Rabbits are often destructive to young orchards. To wrap the trunks with tar felt, or cheaper yet, smear blood or fresh liver over them, will prevent this. Mice work under the cover of weeds, snow, etc., barking trees when other food is scarce. Clear the former away; tread down the latter.

Raspberries. The tender varieties may be laid down and slightly covered with earth. The more hardy sorts can now be given a dressing of well decayed manure or compost over the roots.

Root grafting may be done whenever the opportunity offers. Always graft on stocks at the collar and never on bits of roots. Label, pack securely in boxes of earth and store in a cool cellar. Guard from rats and mice.

Scions may now be cut, half buried in sand and placed in a cool cellar. Label securely.

Strawberry beds to be covered if not already done.

Winter Study. Now that there is comparative leisure, growers should study up improved methods and ideas, by reading horticultural books and papers, visiting and consulting other growers, etc. In fruit localities fruit growers' meetings held monthly or oftener would be found profitable. Such should be rather informal in their character.

VEGETABLE GARDEN.

Artichoke (Green Globe). If not already done, cover with leaves, salt hay or litter.

Cabbage, Cauliflower and Lettuce plants in cold frames to be wintered over should be freely aired in mild weather. Remove snow promptly from the sashes, unless the plants are frozen, when it may be permitted to remain for several days.

Celery. With increasing cold weather gradually give additional protection. Leaves or salt hay are excellent for the purpose. By the end of the month a foot of covering will be required.

Digging and trenching of unoccupied ground to be proceeded with at every opportunity. This is usually considered unprofitable work, but a small trial will prove it to be of the greatest advantage as regards productiveness and quality of crop.

General. *Stakes, poles, etc.,* for another season's use to be provided promptly. *Frames and sashes* for spring use to be repaired and repainted. New ones to be made if required. *Tools* to be repaired. *Seeds* to be properly cleaned and stored in a dry, cool, airy situation.

Improvements and alterations about the gardens may yet be made. Where old bushes are to be grubbed up, or underdraining or trenching is to be done, this is a suitable time for the work.

Litter, such as the trimmings of trees and vegetables, should not lay scattered around. It harbors insects and besides looks slovenly, so remove promptly.

Manure, Muck, and all available fertilizers should be procured seasonably, and in a sufficient supply. No danger of too much if it be properly applied.

Onions. Protect from severe frosts; keep in a dry atmosphere and a temperature of not over 40 degrees.

Onions and Shallots sown or planted in September should be treated as advised for Spinach.

Roots in pits should have the coverings of earth gradually increased as colder weather approaches; a foot or more of salt hay or leaves placed over one side of the heap will render easier access in severe weather.

Spinach. In exposed spots cover with two or three inches of straw or salt hay as soon as ground freezes.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus. Treat as advised below for Rhubarb.

Dandelions. As a winter salad, a supply can be secured by treating the plants as advised for Parsley.

Figs in pots or tubs may be brought forward for early, placing in the warmest part of the early grapery.

Grapes. In the early houses the vines will show signs of growing. Maintain an average temperature of 65 degrees during the night, with a rise of 5 or 10 degrees by day. Secure the new growth as it advances, and see that the borders are well protected by a thick covering of leaves or coarse, littery manure. Vines in the late houses to be pruned, laid down and covered up after the leaves fall.

Lettuce to be sparingly watered during damp, dull weather, air freely on occasion, and keep the Green fly in subjection by gentle fumigations two or three times a week. Remove all decayed leaves.

Parsley roots lifted and placed in boxes in November to be given a light, sunny situation, for growth.

Rhubarb roots lifted in November can now be planted in boxes and then placed in any warm situation for an early supply. Roots for succession to be so protected that they can be easily procured as wanted.

Strawberries may be brought into heat at any time now. Begin with a temperature of 45 degrees, gradually increasing until it reaches 60 degrees. Gradually increase the supply of water as growth advances. Plants for later use to be protected from severe freezings.

POINTS ABOUT POULTRY.

Sunflower Seed It is generally conceded that to feed this is productive of a gloss on the plumage of fowls not to be otherwise obtained.

The Point in the Case. One of the greatest troubles in feeding poor grain, says the Farmers' Home Journal, is not in the loss as compared with good grain, but in the fact that over-heated or musty grain causes many of the diseases which ordinarily afflict fowls.

A Hint for All Times. Poultry are early risers, and they thrive best if an early feed is provided. Anyway don't permit them to be huddled in the poultry house, hungry and thirsty, for an hour or two after sunrise. If such has been your habit, listen outside of their quarters to-morrow morning and judge for yourself if their noisy impatience and the venting of their spite upon each other is not an actual loss to you.—Monitor.

Flues in Poultry-Houses. In building for winter operations a cheap mode of providing warmth may be devised in constructing a brick flue similar to a green-house flue, along the floor of the house, ending in a stove-pipe at the farthest end. The heat is secured by attaching a grate to the furnace connected with the flue. Only sufficient heat to keep the temperature above freezing is required. This is the time to construct the flue.

Feed and Drink Vessels. The bottoms of old wash-boilers, which are often thrown away or sold for a few cents, make good feed pans, and if taken care of will last for years. I prefer these to wooden feed troughs, because you can scour and clean them thoroughly in a few minutes, which you cannot do with wooden troughs, as they get sour in a short time and are more liable to spread disease. For drinking vessels I take the bottom of an old tea kettle. I cover this up after the water is put in, only leaving a few small spaces for the chicks to put their heads through; thereby the water will keep clean and cool. I have managed in this way for years with many chicks, and have not lost one by disease.—X.

Winter Feeding. A writer in the Country Gentleman, referring to the fact that most, if not all, say in winter the morning meal must be warm. In order to test it, he fed during the winter of 1885-86, ground corn, oats and wheat bran scalded, with wheat, buckwheat, oats and corn during the day. Last winter he gave them nothing warm; in every other particular the treatment has been the same. The result shown by the egg basket was for the month of December, with only 25 per cent more fowls, 100 per cent more eggs. His method of feeding young chicks, practiced for many years, has been to feed cracked corn and wheat from the time they come out of the shell till old enough to eat the whole grain, and as a result he has had them laying in September, five months from hatching.

About Diseases. Fully nine-tenths of these are caused by vermin. Careful investigation has established this as a fact. The comb of a fowl may be considered its health indicator. The first intimation a close observer of his flock has is the condition of their combs. Comparatively few birds in their natural wild state die of disease. They have certain ways to keep themselves comparatively free from lice, so are not crowded in a space where only 25 should be; nature's harsh laws are not transgressed, and they thrive in health. Domestic fowls are crowded, become lousy, get the "cholera," roup, canker, etc.—none of which would they have if lice were not preying on their bodies unless it is roup, which is caused by several things. The first time you see a hen moping or refusing to eat, or one with feathers rumpled up, or comb looking dark blue at the end, pick her up and look for bugs. You will find them. Grease her well with an ointment made of lard and sulphur under the wings and over the vent and on the head. Perhaps, if you examine the roosts in the hen-house, by taking them up and looking on the under side wherever the roosts rest on anything, you will be astonished to find the little red lice congregated there. These may be termed the chinch of the hen-house, as they torment the fowls at night and return to their hiding places before the fowls leave the roosts. The roosts should frequently be washed with coal oil.—American Farmer.

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering, such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

508. Range of Quinces. Will they do well where it never gets colder than 10 or 15 below zero?

509. Sweet Potato Culture. Please give directions how to grow Sweet Potatoes, as to kinds to plant, when to plant, kinds of soil, etc.

510. Grape Question. How much earlier are Worden and White Ann Arbor Grapes than Sweetwater?

511. Double Glazing. Is such glazing in actual use and satisfactory after extended trial? I have seen it stated that two thicknesses of glass retard the light unfavorably, and also that frost on the outer layer melts so slowly as compared with when there is but one thickness, thus causing quite an objection. Who can tell?—A. I. ROOT, *Medina, Ohio.*

512. Pears for Market. Would you favor me with a list of some of the better sorts?—S. W., *New York.*

513. Dwarf Apples for Profit. Can you advise setting these for profit?—S. R. J., *Pennsylvania.*

514. Forcing Bulbs Early. Desiring to have some Hyacinths and other bulbs early in bloom, I write for what treatment should be given them for an early crop of flowers.—C. J. W., *Saratoga Springs, N. Y.*

515. Grubs in Cyclamens. The bulbs of my Cyclamens were so troubled last season with small white grubs that I finally threw them out. What could they have been, and how best destroyed?—AMATEUR FLORIST.

516. Cyclamen Treatment for Continuous Bloom. How should Cyclamens be treated in order to secure flowers for the longest season?—C. C. S., *Bucks Co., Pa.*

517. Euphorbia Jacquinæflora Culture. Would you kindly give a new subscriber some instructions on cultivating this plant?—W. W., *Penobscot Co., Maine.*

518. The Culture of Peppermint. Will some reader favor me with information on managing this crop, and oblige YOUNG GARDENER.

519. Saving Zinnia Seed. What is the best method of gathering these seeds, for I have been puzzled to know?—L. R. D., *West Park, N. Y.*

520. Colored Plates of Fruit. Where can I get some of these of my own selection and not in plate book form?—E. A. S., *New Milford, Pa.*

521. Blackberry, Stayman's Early. Is this considered worth growing? With me it has done nothing in the several years I have had it.

522. Raspberry, Crimson Beauty. Has this any value for market in any place? Around here it is not much esteemed, the fruit being large but so little of it. Does it need special conditions?—G. K., *Hastings, Mich.*

523. Raspberries for Canada. Would the Turner, Marlboro or Hansell stand the winter here if protected? —A. D., *Lancaster, Ontario.*

524. Sources of Vegetable Seed. Will some of your readers kindly inform me from where the main supplies of these are drawn?—C. S., *Harrisburg, Pa.*

525. Preparing for Strawberries. Please tell me how to prepare a half acre for next spring's planting to secure the largest yield. What varieties would you advise?—E. V. H., *Towanda, Pa.*

526. Wormy Apples. Our crop for two years has been wormy and unsound, but otherwise good. Can you give us a pointer?—G. C., *Council Bluffs, Iowa.*

527. Market for Herbs. Would like to know where I could find market for large quantities of herbs, such as Anise, Balm, Feverfew (green), Hoarhound, Coriander, Rue, etc., etc.?—A. L., *Atlanta, Ga.*

528. Use of Pine Spines. Are they of value to mix with other leaves in compost making? They accumulate with the leaves in the gathering. Would it not be better to burn them off, as grass does not grow where they lay? What value for mulching?

529. Renovating Old Trees. Some Maple trees in my yard are not as thrifty as I desire, and I write to know how to treat them? A. J., *Sandusky Co., Ohio.*

530. To Build a Brick Flue. What is the usual size and character of a brick flue suitable for heating a greenhouse 9 feet by 60? YOUNG GARDENER, *Erie, Pa.*

531. Azalea Leaves Dropping. Many leaves have of late fallen from my plants. Can you suggest what the trouble may be?—ANXIOUS, *Columbus, Ohio.*

532. Chrysanthemums After Blooming. I should be much obliged for a few directions respecting their treatment now. I wish to take some cuttings and grow them for next year. When should I take the cuttings? YOUNG GROWER, *Springfield, Ill.*

533. Blanching Celery. Would some subscriber kindly favor me with directions for storing with a view to perfect blanching? I have been trying it, but always lose a good deal by getting it too wet or too dry.—B. M. T., *Dalton, Ga.*

534. Twig Blight. My orchard four years planted shows a kind of blight at the ends of many limbs. It seems to travel by rows. Is it a disease, and if so, what is the remedy?—P. B. W., *Montgomery Co., Mo.*

535. Draining the Orchard. I have concluded to set an orchard on land that is disposed to be rather wet. I intend to drain, but the question is would it be safe to set out the trees next spring, and wait with the drainage until leisure turns up afterwards for the work?—M. T., *Burlington Co., Vt.*

536. Propagating Umbrella Pine. Seeing this tree recently illustrated, I would enquire by what means it is propagated?—YOUNG NURSERYMAN, *Rochester, N. Y.*

537. Pruning Evergreens. I planted a number of Evergreens the past spring, all but one of which grew well. Now if I knew how to prune them I should feel fortunate. Will you tell how?—G. W., *Charles City, Mo.*

538. Carnations for Cut Flowers. I would be glad for an outlined course of treating these plants from propagation to maturity.—R. R., *Springfield, Mass.*

539. Rhubarb Culture. This vegetable grown on a small scale convinces me that I could grow more with profit, hence I would be thankful for the best methods of proceedure.—J. W. L., *Madison, Wis.*

REPLIES TO INQUIRIES.

489. **Weigelia Rosea for Hedge.** Yes, this Weigelia will make a pretty ornamental hedge if properly pruned and cared for. The plants should be placed from three to four feet apart, according to their size.—C. E. P.

482. **Oranges not Setting.** If you will place your Orange tree in a sunny situation and maintain an average temperature of 55° when in bloom, at the same time giving air freely, the fruit will set. Carefully avoid extremes of drought and moisture also.—C. E. P.

481. **Wax Plant Management.** The Wax Plant, *Hoya carnosa*, should be given a compost, consisting of two parts turfy loam, one part well decayed leaf mold or cow manure, intermixed with a fair sprinkling of sharp sand. Select a porous or soft baked pot, and see that it is well drained. If the pot is one-third filled with drainage it is none too much. In potting keep the plant in the centre and pot firm. During the summer, which is its season of growth, it should be given a plentiful supply of water, but in the winter it must be kept rather dry and given an average temperature of 55°. In a cool place the *Hoya* is of no use. The flowers show best when the plant is trained overhead, but it can be also trained in any desired manner. Keep the leaves clean of dust, insects, etc.—C. E. P.

505. **Cape Bulb Culture.** Ixias are half hardy bulbs, and should be grown in pots in the greenhouse, where they will bloom about midwinter. When done blooming gradually dry off and keep in a state of rest until September or October, when they should be repotted and started into growth. Sparaxis succeed well if similarly treated. Allium Moly is perfectly hardy, and succeeds with the treatment given to hardy herbaceous plants. It produces in June large trusses of golden yellow flowers. Allium Neapolitanum is tender and requires the protection of the greenhouse. It bears large numbers of pure white flowers, and may be treated as advised for Ixias. Ornithogalums require similar treatment, and so do Freesias. The latter are the most beautiful of all, and as they force very easily can be had in succession from Christmas on. All of these do best in a compost of moderately enriched turfy loam, and require the pots in which they are growing to be well drained. They should be potted in September, and then placed in a cool dark situation, in order that their pots may become well filled with roots before they are started into growth.—C. E. P.

497. **Russian Mulberry Query.** Early spring will be the best time to plant them. They can be planted in the same manner as any other tree or shrub. The distance and place will depend on the purpose for which they are wanted.—C. E. P.

498. **Market Gardening Questions.** The best varieties of Beets for market are the Eclipse and Early Blood Turnip. The best Sugar Beet is Lane's Imperial. The best varieties of Sugar Corn are the Early Minnesota for early, Early Concord for succession, and the Amber Cream and Mammoth Sugar for late. Either of them will answer for home use and all are grown very extensively in this vicinity for the New York market. The best combined cultivator and drill for garden use is the Planet, Jr.—C. E. P.

499. **Grapes in Florida.** By all means procure state-grown vines.—C. E. P.

503. **Liquid Manure Making, Etc.** Fresh manure is best for making liquid manure. Its effects, if used too freely or too strong on Roses, will be shown in the unhealthy appearance which they will assume.—C. E. P.

475. **Dividing Tree Pæonies.** They can be divided, but it should be very carefully done, and as early in the spring as possible. Even then their growth will be most materially interfered with for some two or three years. They are generally increased by grafting on the roots of the herbaceous sorts.—C. E. P.

459. **Protection from Rabbits.** Rabbits can be readily prevented from destroying small trees by smearing with blood some six or eight inches of their trunk from the ground up. Blood can be obtained where animals are slaughtered, and applied with a paint brush.—C. E. P.

480. **Root Pruning Fruit Trees.** The object in root pruning fruit trees is to bring all that are thrifty and of rapid growth into a fruitful condition immediately, and is advisable only on common standard trees, as it somewhat shortens their life. The operation can be performed at any time during the autumn or winter, and consists in opening a trench several feet from the trunk and cutting off the principle roots. This not only throws the trees into early leafing, but if repeated at intervals of two or three years causes them to assume a dwarf habit. It is a fair plan for amateurs, but is hardly practicable on an extensive scale.—C. E. P.

462. **Cultivating the Currant.** Currants can be successfully grown in any deep, well enriched soil. And in order that they may be readily cultivated, it is best to plant them in rows of not less than four feet apart each way. After planting cultivate freely so as to keep them clean and free from weeds, and every season just before winter sets in spread three or four more shovelfuls of well decayed manure around the plants, and if at all possible fork it in early in the spring. After this all the attention they will require consists in keeping them well cultivated and giving the annual dressing of manure. They should be also carefully examined every winter, and all superfluous wood removed. One year old plants are to be preferred for planting, and this should be done as early in the spring as possible. The Cherry, Red or White Dutch, are the most profitable varieties for market or home use.—C. E. P.

471. **Moles in Orchard.** Procure one or two Isbell mole traps, and faithfully follow the directions that accompany them. This may appear slow work, but by the exercise of a little patience it will prove to be an effectual and safe remedy.—C. E. P.

473. **Foreign Grape Culture.** The best varieties for a cold grapery are Black Hamburgh, Buckland's Sweetwater, Red, White and Grizzly Frontignan, Rose Chasselas, and White Sweetwater. For a house of thirty vines I would plant sixteen Black Hamburgh, four Buckland's Sweetwater, and select the balance from the remainder of the list. Chorlton's Grape Growers' Guide is an excellent work on the subject.—C. E. P.

504. **Mildew and Aphis on Roses.** For mildew on Roses procure a bottle of Henderson's Mildew Mixture and apply according to the directions which accompany it. For the green aphis dissolve two ounces of Tobacco soap in a gallon of water, and apply with an ordinary or bellows syringe. Henderson's Insect Death Powder is also an effectual remedy for the aphis. Apply with a powder bellows or gun.—C. E. P.

474. **Northern Exposed Greenhouse.** Unless your house is very small and tightly built, you will require something more than an oil stove to heat it. You must not expect many flowers from such a house, yet Camellias, Azaleas, Chinese Primulas, Oranges, Lemons, Chorozemas, Ericas, Epacris, Pittosporum, Jasminum grandiflorum, Cestrum aurantiacum, and others, would do very well. But if you could maintain an average temperature of 55°, Palms, Ferns, cool house Orchids, and some of the more rare species of Cactus, would prove very satisfactory when grown in such a house.—C. E. P.

467. **Pears from Seedling Trees** If you allow them to remain on their own roots they will not fruit until they are eight or ten years old, but if grafted on the extremity of the branches of a bearing tree they will bear the fourth or fifth year.—C. E. P.

465. **Pruning Dwarf Pears.** I would allow them to take their natural form as far as possible, merely removing all weak and crowded branches. All strong or rank growing shoots should be pinched back when of moderate length.—C. E. P.

472. **Hot-bed in October.** You cannot do anything with a hot-bed at this season of the year, for from now on they require all the skill and care that experience can bestow upon them when filled with growing crops. They are more generally used for starting the seeds of vegetable and other plants of a tropical nature, and growing them on in heat until the proper season arrives for placing them in the open air, and for this purpose nothing is gained by an inexperienced person starting them before the middle of March. Even then they require a certain amount of attention, and unless given at the proper time, failure is certain.—C. E. P.

470. **Sweet Peas Failing.** They were given too rich a soil. Next season try a deep, but moderately enriched soil. It is best to manure the ground the year previous in order to avoid too rank a growth. In very rich soil during a wet season they are very apt to grow all to straw, and then they will not flower until the growth is checked.—C. E. P.

487. **Propagating Grapes Out-of-Doors.** Plant the cuttings where they are to remain until well rooted. Let them be about five inches in length and place in rows two feet apart, the cuttings being two inches apart in the row. Cover with evergreen boughs as soon as the ground freezes, to prevent their being displaced by repeated thawings and freezings.—C. E. P.

476. **Cuttings of Lapageria Rosea.** Peat is the best soil, but the cuttings take a long time to form roots. They should be kept under bell-glasses until they are rooted. A greenhouse temperature is best. The plants are propagated by layers, in preference to cuttings. A strong shoot ought to be pegged into the ground with the leaf at each joint protruding; roots and shoots will grow from each eye in the course of twelve months.—A. H. E.

483. **Rooting Le Conte Pears.** The Le Conte Pear does not grow very readily from cuttings, except in very favorable locations, one of which is Thomasville, Ga. The cuttings are made of pieces of matured wood about six to eight inches long, which are cut just below a bud and set early before vegetation starts in spring. The rooting commences at the buds and is much more certain when the cutting is made with the bud near the bottom of the cutting. The season and soil has much to do with the success. The entire cutting, except the upper bud, should be set in a loose, warm soil, well firmed. Warm sun and a fair amount of moisture adds much to the chances of success, which anywhere, except in Thomasville, Ga., is very uncertain. We should advise root grafting the Le Conte on pieces of Apple roots having the bud near the junction of the Apple roots. The cutting is kept alive by the Apple root, to which the Le Conte takes kindly until it makes roots of its own, which it does in such cases readily, then when well rooted the Apple root, being of no farther use, can be removed, giving a perfectly rooted Le Conte.—ELI MINCH, *Shiloh, N. J.*

495. **Transplanting Young Walnuts.** These can be transplanted in fall or spring, if care is taken not to break or cut the roots too much. They will not stand rough usage like many of our forest trees.—P.

496. **Peaches from Seed.** Peach-stones should be planted in the fall in an exposed place, in moist soil, where they will have the full action of frost. In the spring many of them will be found opened and the kernel exposed; the remainder can be carefully cracked and the kernels planted permanently an inch and a half deep.—P.

495. **Transplanting Young Walnuts.** There is but a small portion of this country in which the shell-bark or shag-bark Hickory (*Carya alba*) is known as Walnut. But Mrs. J. D. E. must mean this Hickory. Three-year old seedlings of nearly all this family of trees, especially the Hickorys, left to grow undisturbed where the seed was planted will not live when transplanted, unless great care is taken. Seedlings of this family usually have a main or tap root running directly downwards, and make but few small side roots under two to four years, and when these do form, they are so deep down in the ground that a sufficiency of them to support the tree when transplanting is hard to get. Therefore, as a rule, all such seedlings should be transplanted when one, or at the farthest, two years old. This transplanting gives them, after growing one or two years, plenty of roots that can be got when transplanting again. Mrs. E. should dig out her seedlings very deeply, getting all the tap root possible; then dig a hole deep enough to plant the tree two or three inches deeper than it was before lifting, and pack good surface soil very firmly around the root next spring or this fall.—D. B. WIER, *Lacon, Ill.*

514. **Forcing Bulbs Early.** Where Hyacinths, Tulips, etc., are required for early flowering, one sees various plans employed for forwarding them, and amongst others the objectionable one of keeping them close as soon as potted, forgetting that root action must be in full sway before the flowers will advance. For early flowering the chief point is to pot early; then to place the pots out-of-doors, and cover them with coal ashes to prevent damage by slugs, and also to keep the bulbs in a more uniform state as regards temperature and moisture than when exposed. Treated in this way, by the middle of November the pots will be full of roots and the tops just starting—that is, if they were potted early in September. When introduced into the forcing house most progress is made when the crowns are kept in darkness; therefore at that time they may be placed anywhere underneath the stage, and should have another pot inverted over them, as they can then be examined at any time without inconvenience. Lilies of the Valley, on the other hand, flower without any signs of root action; therefore they may be introduced into heat as soon as potted; indeed, when required to bloom before Christmas such a course is absolutely necessary, and for that purpose well ripened crowns must be obtained, and they cannot be had thoroughly ripe much before November. A pretty subject for forcing, and one with which there is but little difficulty, is the Siberian Squill (*Scilla Siberica*), the bright blue flowers of which are very effective during the dull season. It requires similar treatment to that usually given to Tulips.

485. **Onion Planting in the Fall.** I do not like to plant Yellow Denver Onion sets in the fall, nor yet Potato Onions; prefer to plant in the spring just as soon as I can get to work on the ground.—M. T. THOMPSON, *E. Rockport, Ohio.*

494. **The Cuba Lily.** The Scilla Peruviana, which I suppose is meant, requires the same treatment as the rest of the Squill family; leaf mold, peat, sand and well-rotted manure in equal parts suits it well. Not being quite hardy, it must be grown in a pot or frame.—P.

515. **Grubs in Cyclamens.** Cyclamens appear to be rather liable to the attack of a kind of white grub, and I would advise you in future to shake them quite out of the old soil by the end of May, washing the roots so that every particle of mold is cleared off, leaving the base of the corms clean. Then lay them in a cold frame, using very light, sandy soil, and keeping it just moist. In the course of a month fresh roots will be produced from the old ones, and direct from the underside of the corms, when they may be potted. By treating them thus, any eggs or larvæ which may be in the old mold will be got rid of, and the plants will be free for the season.—A. H. E.

517. **Euphorbia Jacquinæflora Culture.** Not the least of the merits of this plant is the fact of its blooming at a time when flowers are scarce, viz., from the middle of December to the end of February. It requires a high temperature, nothing less than 65° or 70° is sufficiently high for it. Young shoots taken off with a heel in February, inserted in light, sandy soil, and placed in a close, moist heat will root freely. They should be potted off before the roots get entangled together, using a mixture of about three parts good light loam, one of leaf-soil, and one of well-decayed cow manure, with a good sprinkling of sand, after which they should be replaced in strong heat till established in the new soil, when they may be removed to an ordinary greenhouse for the summer, and be repotted at discretion. The plant may with advantage be trained up a trellis, as in this form it occupies less space than amongst other plants.

529. **Renewing Old Trees.** In answer we cannot do better than to give the directions which the late Ben: Perley Poore, a most successful tree grower, put into practice in the case of both forest and fruit trees. This was to dig a trench four feet in width and three feet deep around the tree. A ball of earth was by this means left directly around the trunk of the tree, containing the main roots. In this trench he would put soil, with liberal allowances of manure, refuse from a blacksmith's forge and some potash, and have them all well mixed together. The effect of such treatment was to clothe the tree with the luxuriance and vigor of a young tree.

531. **Azalea Leaves Dropping.** There is nothing unusual in the leaves of Azaleas falling off in the autumn—in fact, it is perfectly reasonable for them to do so. They do so in large numbers when in perfect health at this time of year, but it is quite necessary to water them with great care from this time until the end of February, as the soil should be kept only just moist, and not wet, for days together.

532. **Chrysanthemums after Blooming.** I have tried several ways of managing my plants after blooming, and have found the following to answer admirably: As soon as the bloom is over I cut them down to within 6 inches of the soil, and place the pots in a well protected frame, in which it never quite freezes, and let them have plenty of air. They will soon throw up strong healthy cuttings, which can be taken off when about 3 or 4 inches long, and inserted in sandy soil, around the sides of 3-inch pots. Then water well and they will soon root.—C. W.

492. **Pests on the Mushroom Bed.** Mice betray their presence by the prints of their front teeth on the portion attacked, and rats make holes in the beds. The ordinary traps will be found effectual, or one may readily be improvised with the aid of a flower pot. For wood-lice, place Potatoes cut in half and hollowed out in their haunts. They will congregate on the Potatoes, and a dip in boiling water will soon settle them. The passage of snails may be easily tracked; visit the beds at night, when they can quickly be found, or place here and there little heaps of damp bran or bits of cabbage leaf. These traps should be frequently examined. The flies are attracted in clouds by the manure; they may be destroyed by placing about a number of pans filled with water, to which a few drops of oil or turpentine or soapy water have been added. They are attracted by the odor, and thus drown themselves. If a floating light is placed in a convenient position, they will fly around it, burn their wings, and fall into the water. Mites may be destroyed by lime-water, and beetles must be hunted for.—A. H. E.

485. **Onion Planting in the Fall** I would not advise any one to plant Onion sets in the fall. The repeated thawings and freezings would throw them out, and eventually destroy them. Potato Onions should be planted early in the spring in rows eighteen inches apart, the bulbs being placed four or five inches apart in the row.

486. **Greenhouse in Small Town.** I do not think that the profits arising from the sale of flowers alone would be enough to warrant a beginning, but if you would add two or three acres of well grown fruit and vegetables you ought to make a respectable living. Keep as near to the business center of the town as you can.—C.P.

493. **Chrysanthemum Leaves Falling.** It is no strange thing for Chrysanthemums to lose their leaves when grown in pots. It is, I think, caused by beginning to feed them too late or feeding too strongly. Some growers recommend a little top-dressing with some artificial manure, but I have found a slight dressing with guano-water (one teaspoonful to a gallon of water), very successful. Your Chrysanthemums were taken in too soon. I do not take mine in until they show color, and, when under glass, they have abundance of air. For mildew, wash the leaves with soft soap and water and dust with flowers of sulphur.—A. H. E.

482. **Oranges not Setting.** Flowers of cultivated Oranges are often imperfect, and when this is the case cannot, of course, produce fruit. If they are examined soon after they expand, it will be seen what flowers are perfect, and what are male flowers, only producing stamens. In the perfect flower, the style surmounted by a prominent stigma will equal the stamens in length at flowering time, whereas the style in others is very often rudimentary, and such flowers never produce fruit. The house should be kept dry and airy in which flowering Oranges are grown, and this will assist the setting of perfect flowers.

489. **Weigelia Rosea for Hedge.** The Weigelia has been tried with fine success, making very fine hedges. The distance apart will depend much on the size of the plant you use; say, small plants eighteen inches apart, larger ones in proportion. It does not flower much when cut close, but makes a very pretty dwarf hedge.

469. **Cutting Scions.** I prefer to cut about the end of November or first of December; tie in bunches label securely, and pack in sawdust in dry, cool cellar until wanted for use.—C. E. P.

488. **Evergreen Hedge in Shade.** The American Arbor Vitæ will be the most suitable for the purpose. Do not trim it back severely, and every fall give a dressing of good, rich compost, this to be worked in in the spring.

479. **Apples for the South.** A list embracing two dozen select varieties might comprise the following: *Summer*, Early Red Market, Family, Horse or Haas, Hominy, Julian, Red Astrachan. *Autumn*, Buncombe, Carter's Blue, Carolina Greening, Equineletee, Taunton, Yapp's Favorite. *Winter*, Black Warrior, Ben Davis, Common Pearmain, Chattahoochee, Hockett's Sweet, Mayerack, Moultrie's, Pryor's Red, Romanite, Shockley, Stevenson's, Yates. The majority of these can only be obtained from Southern nurseries.

533. **Blanching Celery.** One of the most common causes of Celery not keeping in trenches is from getting wet, or else freezing too hard after blanching, leading in either case to rot. Celery should also be set perfectly upright, for if this is not done it will fall down more, causing it to curve out of shape, and if rotting begins it will spread faster. An approved course of treatment is to make a trench in drained soil and to be at least two feet deep,—three would be better,—and about a spade's width. The trench may be several hundred feet long. Into this the Celery should be packed standing upright, after which the trench should be covered with boards to keep out wetness, and on top of the boards two feet of soil. There should be straw over the open ends.

458. **Fig Culture North.** The trees can be grown in the North in sheltered situations, by laying them down in winter and covering with earth, forest leaves or evergreen branches. Or they may readily be brought along to fruit in tubs or boxes, placing them in a pit or cellar through the winter. Under such circumstances their outdoor culture could of course never be followed to any great extent with advantage, or beyond gratifying curiosity. The trees are mainly propagated by seeds and cuttings, the latter only answering for perpetuating the improved varieties. Cuttings may be taken off late in the fall, and kept in the cellar until spring and then be planted out. Green or summer cuttings may also be rooted with bottom heat. The Fig is sufficiently hardy to stand the ordinary winters of sections south of Washington. In the North the covering of earth should be applied in November and taken off in April. It should be about six inches deep.

450. **Gladiolus Failing.** I think that the bulbs of your Purpurea aurea were destroyed by worms; or else you planted them in contact with rank stable manure. Either would cause them to act in the manner you describe.—C. E. P.

519. **Saving Zinnia Seed.** As soon as the flowers have faded or before frost pick the heads and spread them out thinly in a dry place under cover till thoroughly dry. If only a few are to be saved, when dry, they may be cleaned by rubbing the heads between the hands to remove the dried petals, then winnow by pouring from one pan to another in a light wind.—L. W. GOODELL.

459. **Protection from Rabbits.** Not having crude petroleum in the Far West, I reply as follows: Melt together one third Frazer axle grease and two thirds lard; when cold, apply to the trees by rubbing a little in the hands, then rubbing the tree, one application in early winter is sufficient; it has given me the best of satisfaction the past five years.—S. HILTON, *Spokane Co., Wash. Ter.*

463. **Plants for Rockwork.** For 24 species well suited to this purpose we would name Thrift (*Armeria vulgaris*); Wooly Milfoil (*Achillea tomentosa*); Alyssum saxatile; Aquilegia Canadensis; Rock Cress (*Arabis Alpina*); Sandwort (*Arenaria*); Meadow Saffron (*Bulbocodium vernum*); Aubretia; Harebell (*Campanula rotundifolia*); Cerastium tomentosum; Spring Beauty (*Claytonia Virginica*); Herbaceous Clematis; Gentiana acaulis; Ground Ivy (*Nepeta Glechoma*); Bluets (*Houstonia cærulea*); Lychnises, Oxalis Violacea; Penstemon acuminatus; Low Phloxes; Saxifragas in variety; Sedums in variety; Silene Alpestris; Alpine Speedwell (*Veronica Alpina*).

513. **Dwarf Apples for Profit.** We do not advise setting these for market. They are fine as ornaments, and when large trees cannot be well grown a few dwarfs may be for fruit.—A. M. P.

512. **Pears for Market.** We can find nothing better for standard than Bartlett, Sheldon, Seckle, Howell, Lawrence and Mt. Vernon; and for dwarfs, Duchess de Angoulema, Louise Bonne de Jersey, Buerre de Anjou, and Howell.—A. M. P.

523. **Raspberries for Canada.** Both Marlboro and Turner are perfectly hardy in Western New York, and should be in Southern Canada. Hansell has the reputation of being hardy.

446. **Grubs in Strawberry Land.** I would plow the land as thoroughly and deeply this fall as late as possible, and then give a heavy dressing of lime, wood ashes or any other concentrated or commercial fertilizer. Allow it to remain in this rough condition all winter. A moderate dressing of salt applied in the same way would probably be beneficial.—C. E. P.

527. **Market for Herbs.** We do not believe there is any large market for any of these herbs—or even a small one—only a few bunches are of such things sold, even in New York.—P. H.

521. **Blackberry, Stayman's Early.** This Blackberry appears to be of no value on our grounds. It kills back considerably in winter and matures very little fruit.—E. S. GOFF, *Geneva, N. Y.*

522. **Raspberry, Crimson Beauty.** As grown at the Station this variety is fully up to the average of the Red Raspberries tested. It is a very vigorous grower, the fruit is large, rather deeper red and rather softer than that of the Cuthbert, of excellent flavor, and is produced abundantly. The tips killed back slightly last winter, but not sufficient to prevent an excellent crop the past season.—E. S. GOFF, *State Farm, Geneva, N. Y.*

498. **Market Gardening Questions.** The best early Beet for market is Eclipse. The best late Half Long Blood Beets, or where a round beet is preferred, Blood Turnip Beet. White Sugar Beet where it does well is preferable to any other. For the last two years the most profitable sweet Corn with me has been the Marblehead for early and the Landreth for second. In my market gardening business these two varieties have given me better returns than any others tried.—M. M.

504. **Mildew and Aphis on Roses.** Dust over the whole plant with tobacco dust and flowers of sulphur united. I find it checks or prevents these on every plant subject to them; only, with this as with all other remedies, the applications have to be kept up. No single application of anything is effectual.—MANSFIELD MILTON.

480. **Root Pruning Fruit Trees.** In an orchard here the Apple trees are about a dozen years planted. Soil sandy and richly manured, and we crop between the trees with vegetables. The trees grow a good deal but do not fruit enough to please me. Last September I root pruned sixty trees—described a circle around the trees 4 to 6 feet away from the stem, according to the size of the tree, and threw out a 3 feet deep trench which was immediately filled up again. I want to stop this over-luxuriance. If I get the trees once into the way of heavy bearing, I can keep them so, and manure and cultivate the ground between too. By summer pruning I can check luxuriance in Pear trees enough and get them well filled with fruit spurs without any root pruning.—W. F.

485. **Planting Onions in Fall.** I plant Danvers and Wethersfield Onions in September in ground too light for seed Onions in spring. They now are up some six or seven inches. They live well and are sure to yield a good crop. If the ground is empty in September what's the use of saving the sets in the house over winter? No, plant them in the fall, they do fully as well and it's so much work past. But as Potato Onions like rich heavy land, and they are not apt to sprout if kept indoors over winter, I delay planting them till April. But I have planted them in the fall with good enough success. I wouldn't bother with top Onions.—W. F., *Long Island.*

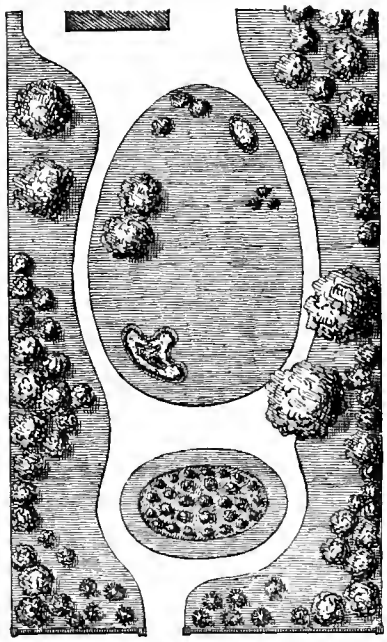
506. **Everbearing Strawberry.** Yes, there are several of them, but in my opinion the best of them is poor enough. I have a bed of them here, and I can pick a dish of berries from it most any day from June till October, but they are small and poor, and for all the crop they bear, not worth growing.—W. FALCONER.

528. **Use of Pine Needles.** Don't use them among leaves for leaf mold. Don't burn them if you can use them as an absorbent in the manure yard or as bedding in the hog or cattle yards. If you cannot use them in this way cart them into a heap in some hollow and let them rot there, and a year hence spread them on the ground as a foundation for a manure pile. Don't let them lie on the grass around the trees as they will injure the grass. Better rake them off and use a scattering of rotted manure instead. They are a capital mulching for trees of their kind, and before they begin to rot, for vigorous herbaceous perennials as Cypripediums, Bellworts, Trilliums and the like whose crowns need a little protection from sunshine in winter; also, if thinly used, over dwarf evergreen plants as Veronicas, Dianthus and other alpines that are perfectly hardy so far as intensity of cold is concerned, but need a little shading in frosty weather.—W. FALCONER.

Laying Out the Front Yard.

The accompanying engraving sketched from an actual example shows what can be done to render even a small-sized front yard attractive by judicious methods. The original of our sketch is a town lot about 35 feet in width by upwards of 50 feet long.

It is seen that a large assortment of hardy shrubs (68 in all) are introduced, mainly in the outskirts of the place, besides an oval bed planted to Roses, several other flower beds, half a dozen ornamental and shade



LAYING OUT THE FRONT YARD.

trees, and yet space for ample stretches of lawn is afforded, and there are plenty of good walks, also.

The chief merit of this plan lies in its general simplicity, and in the fact that the central space is in the main unoccupied with shrubs and trees. The small oval plat in the front half, and which is planted to Roses, affords an exception to the prevailing principle referred to. But this is in such a modified form that it tends to enhance rather than diminish the fine general effect.

Concerning the principle of a comparatively open center, such as is here seen, we never tire of calling to it the attention of all planters. Its advantages: It affords an extended view of the entire area, giving an idea of breadth and repose without which no garden can be satisfactory. The shrubs and trees are advantageously located in a more or less continuous line towards the outskirts, affording the best possible opportunity for being seen to advantage, both individually and collectively.

Something may be said in favor of the walk arrangement here shown. It is, that the walks, with being double in character, provide a pleasing balance to the parts of the lot, besides permitting the center of the area to be in grass, an arrangement which, without any exception, is an advantage for fine appearances. In such a case the walks when well kept—and they must under such circumstances be well kept—in themselves also serve a distinctly ornamental purpose. The idea of a somewhat increased expense in making and keeping them must, however, not be lost sight of by economical gardeners. Such might prefer a single walk, keeping it somewhat to one side of the middle of the lot. Even in that case it might by the introduction of one or more graceful curves, with a group or two of shrubs in each bend, be made to present altogether a pleasing appearance.

How to get a Large Crop of Strawberries.

J. M. SMITH, GREEN BAY, WISCONSIN.

In answer to inquiry No. 525 I would say that my system of preparing the ground and setting and growing a crop of Strawberries is as follows: My soil is a rich sandy loam, and made yearly richer by heavy manuring with stable and barnyard manures, it being put on at the rate of 35 or 40 two-horse loads per acre. Generally we put about one half of what we design for the beds upon the surface and plow it under, and the balance is put on after plowing and harrowed in. The last named should be well rotted and thoroughly mixed with the soil, otherwise it will be very troublesome in setting and tending the plants.

If my soil was a heavy clay, I should prefer fall plowing; but being it is not, I cannot yet see that it is improved by pursuing such a course. But whether the soil be a heavy clay or something else, it must be put in the best of order before any plants are put in the ground. It must be well drained. If it has been previously underdrained, all the better; but it must be well surface drained, for the plants will not do anything like their best if their roots are for any length of time in a soil that is thoroughly saturated with water.

When the beds are ready for setting they are marked off in rows two feet apart each way. And now comes the important question, What shall we set? I have spent much time and money within the last 25 years trying to get something that would do better with me than the Wilson, but have not yet succeeded, unless the Manchester, which I have had on trial for some years past, shall prove to be its superior.

In selecting plants for setting take none that have ever borne fruit. Select good, medium sized runners of the previous fall's growth, and set as marked, two feet apart each way. Cultivate carefully during the summer. Pick off the blossoms, and keep the entire growth and strength confined to the plants. As they throw out runners train them around the parent plant in a circle like the spokes of a wheel, the plant being the centre. Allow no weeds to grow.

When the ground becomes sufficiently frozen to allow a team to go over it, cover the plants with marsh hay, though straw is equally good provided there are no foul seeds in it. Cover the plants sufficiently deep to hide them from view. The following spring after the ground is done freezing and thawing, take off the cover and put it in a stack, and it may be used again the next winter. Clean out all the weeds that make their appearance, being careful not to hoe too deep, or so deep as to injure the roots of the plants.

Now comes the picking season. If they have done well, the beds are nearly full of strong healthy plants and they are full of fruit in all stages of ripening, from the occasional blossom to the occasional ripe berry. It needs care to get through them without injuring the fruit.

But your query was concerning the getting of a large crop, and by following the above plan I rarely fail to get from a large to a very large one. If Crescents or any of the stronger growing varieties are used, three feet apart each way is sufficiently near. They will cover the ground. By following the above plan I do not consider 200 bushels per acre an extra large crop. In fact the yield on my ground for the last two years has exceeded that amount, although the drought has been the worst ever known.

THE COMPLETE GARDEN.*

XII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 29.

HEELING-IN THE TREES. Let us now suppose that the planting stock ordered from the nursery has arrived at the grounds. As some time must naturally elapse, in case quite a number of trees, etc., are being set, before all can be planted, a first step should

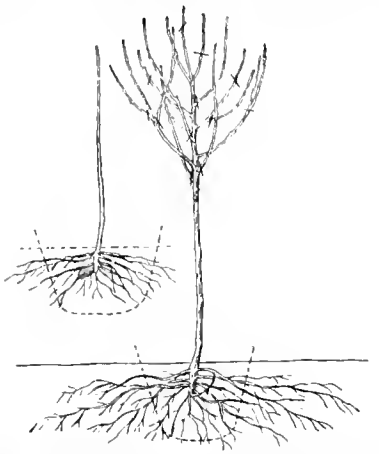


Fig. 37. Three Year Tree in the Nursery; dotted line showing place of cutting the roots in digging. Upper figure shows a one year Tree.

be to heel them in well by the roots. This for the special purpose of thorough protection against the possibility of the roots drying out; and, to have the trees set conveniently in a line so that the individuals and their labels can easily be seen, and can be taken out promiscuously as wanted, without unduly exposing the roots of those remaining back. It is to be borne in mind that evaporation goes on constantly from every twig of the tree and from the trunk, as well after as before digging. If then from lack of proper heeling-in, the roots are exposed in any way, or if, the soil lies but loosely against them preventing their drawing in moisture, the injury to the tree may be very marked without its being even suspected. Evergreens especially, being in full leaf, are very liable to suffer if attention to these points is disregarded. My method of heeling in trees may thus be described: A trench about one foot deep and two feet wide is dug in mellow soil at one or more points convenient to where the planting is to be done. Into this trench the trees, etc. are stood and fine dirt is sprinkled over and among the roots, to come in contact with all parts, finishing by filling in the earth first thrown out. The soil over the roots is then well firmed for laying compactly against every root. With such treatment they may remain for days, with little harm. Still, good heeling-in must not make one feel easy in delaying planting.

PRUNING AND SETTING OUT TREES. Here are matters concerning which there is need of very clear light for the inexperienced, as without doubt nine out of every ten such commit more or less serious blunders in this with bad results. Where the liability to error comes in is, that the average planter, of small or no experience, seems to have an inordinate desire that the *top* of his tree shall be preserved full and perfect as it came from the nursery, and having little thought of the comparative size and strength of the root beneath. He has not yet learned that it is the extent and vigor of the *root* which should be the leading consideration in all planting; that if the root be poor, or out of balance with the top it supports, that the future of the tree cannot be promising.

To gain a right understanding of this subject the annexed engravings will assist. In the act of digging, more roots are invariably lost to ordinary trees, say three years and over old, than one easily appreciates, while the top is not similarly affected. Fig. 37 goes to illustrate this idea by a cross-sectional view of a nursery tree, the place of cutting the roots in digging being shown by the dotted line. It is seen that the main roots are cut at points that allow of not above one-third to one-half of those being retained, while those lost are mostly the net-work of fine roots. To get a still clearer idea of this, let a circle be scribed on the floor, one foot from a center (representing a tree) as being the point at which the spade cuts the roots in digging, and another at two and a half feet from the same point as describing the average length of the main roots, and then compare the area inside of the first circle with that between the first and second for realizing how great must be the extent of fine roots remaining back at digging. It is safe to estimate that usually not above one-fourth of all the roots are retained to such a tree in digging.

It is right in this matter of retaining a large proportion of roots that the advantage of one or two-year old trees in preference to older ones arises. In the upper part of Figure 37 is shown a one-year old nursery tree, with the probable line at which the root would be cut in digging. By comparing the percentage of the roots here remaining to the tree with the vastly smaller proportion retained by the larger tree, it is not difficult to understand why, with the same care in digging, planting and after culture for both, that the younger should so generally reach maturity in *actually less time* than is required for those some years older. It has long been observed that the greater the experience of a planter the more apt is he to choose young, vigorous trees for setting, while usually the less experience possessed the larger the size of tree demanded.

But assuming that Figure 37 inside of the dotted line very nearly represents the average nursery tree as regards loss of roots in

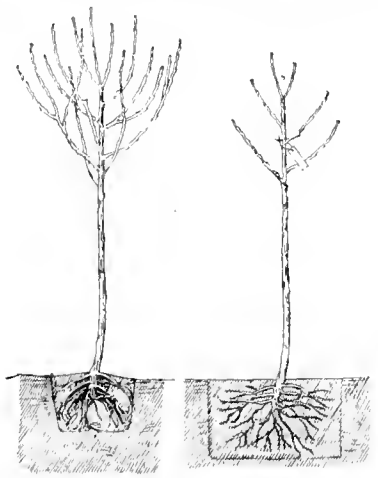


Fig. 38. Planting very badly done, after a prevalent method.

Fig. 39. Planting well done and with due regard to pruning.

TWO WAYS OF SETTING THE TREE OF FIG. 37.

digging, we may now consider what would constitute good and bad planting of such a tree. Figures 38 and 39 show respectively the same tree, as planted, in the former case about as badly as could be done, yet after a very prevalent fashion, in the latter set out as a wise planter would do his work. The essential difference of the two methods is easily seen; the first having had regard more to the top, the other to the root. We may assume that the planter of Figure 38 beheld in his tree fresh from the nursery this handsome top and shape, to interfere with which, by pruning, he could not think of doing for fear of spoiling it. He knew that roots belong under ground, and to accommodate these a hole was easily dug, for as done it was both too narrow and too shallow. It seemed large enough until the tree was brought into place when it was found necessary to cramp and crook the roots to get them in at all, but this was easier done than to enlarge the hole, so it was allowed to answer. Soil was thrown over the roots of course and this no doubt was tramped somewhat, and there stood the tree, so far as appearances *above ground* were concerned, as handsome as ever it appeared in the nursery, and the owner congratulating himself on how he was improving his place by tree planting. But how it really compared (top aside) with its former self, the roots now much shortened, tortured and laying in masses, and having air spaces beneath them and clods at the sides and above, and withal set so shallow that the crown as well as divers turned up root ends appeared in sight above the natural surface, the two Figures 37 and 38 show clearly enough. It is no wonder that following the great amount of such planting always going on, the loss in dead trees annually should be so great.

Fig. 40. Earth Rammer and Stick.

But the same tree in the hands of a good planter would fare very differently. His first thought would be to secure something like a corresponding balance between the top and the much shortened roots. Looking over the tree (Figure 37), knife in hand, he would see how numerous branches could come entirely away and the remaining ones be shortened, and his cutting would be in accord something as shown by the small cross marks in this figure. It would end with the top being reduced to about the extent of Figure 39. Then in setting the tree he would aim to favor the root in the best manner possible by about the following steps: *Step one.* Dig the hole both larger and deeper than the roots without any unnatural bending would need. *Step two.* If the subsoil beneath seemed especially sterile he would throw out a foot or more of it, filling the space with fertile loam, otherwise he would turn over the subsoil, incorporating some old well decayed manure with it, treading all down somewhat. *Step three.* See that there was plenty of fine earth at the side of the hole, for use in placing every root in contact with such. *Step four.* In bringing the tree to the hole pruning away the bruised ends of any large roots, also cutting off any broken parts of roots with a sharp knife. *Step five.* Begin the planting by throwing in earth where the tree is to stand, and enough so that when the tree was brought in place its crown should be a little below the natural earth line. *Step six.* Placing the tree, and then with great care working the fine earth between the roots, observing to have the latter spread out naturally. In thus filling in soil great stress would be laid on having it packed firmly against the roots in order that these could the more readily absorb moisture, as well as for steadying the top. Indeed if the soil was light and friable at planting time he would find little danger of getting it too firmly packed.

Such a course of planting would at its completion find the tree in the favorable condition, shown by that of Figure 39. And prvoided the handling of the tree previous to planting was well done and the planting was seasonably performed there would hardly be one chance in a hundred of the tree not succeeding. I commend these figures to the especial attention of all inexperienced tree planters. As regards tools for assisting the planting, the earth stick for working the soil between the roots, and the earth rammer, in Figure 40, are very useful.

The extent of the pruning shown in Figure 39 is such as might apply to the average of orchard and shade trees as planted. Others than these will receive attention later.

(To be continued.)

Objections to Double Glazing.

W. C. STRONG, WABAN, NEWTON HIGHLANDS P. O., MASS.

In reply to inquiry No. 511 in respect to "Double Glazing" I have to say that, several years since, I made a somewhat extensive trial of it, with rather unsatisfactory results. The outer course of glass was like the ordinary method of glazing. The sash-bars were 2 inches in depth with a groove cut near the lower edge, down which groove the inner course of glass was slid from the upper end of the sash-bar, the panes being kept in place by butting against each other. The dead-air space between the outer and inner courses was about an inch and a half deep.

THE TRIUMPH ASTER.

We should expect that a house so protected could be heated with great economy. But the saving in this respect was less than I anticipated, and there were objections which seemed to outweigh any advantages. The deflection of the sun's rays was much more than doubled, by reason of the more acute angle at which they would infringe upon the inner glass. More than this, the frost and snow were very slow in melting from the outer glass. Again the inner course of glass would become more or less clouded with dust and thus cause obstruction of light. In these three ways the amount of sunlight was materially diminished.

With a single thickness of glass, a considerable protection is obtained by the heavy coating of hoar frost that forms in severe nights, which serves as a good non-conductor of heat, and also closes any air spaces. This frost quickly disappears as soon as the sun is up. But with double glass this coat does not form to any extent. In my opinion cloth curtains upon rollers, which can be drawn at night, are more desirable and cheaper than a second covering of glass.

Early Flowering Chrysanthemums.

A. H. FEWKES, NEWTON HIGHLANDS, MASS.

In addition to the list of early flowering Chrysanthemums given by Mr. Thorpe in his article on page 3, October issue, I would mention the following, all of which are good and flower with us earlier than La Vierge or Soeur Melaine:

Lady Selborne; pure white—Japanese.
Madame C. Desgrange; " "
Mlle. Lacroix; " "
M. Neville; light rose pink— "
Blanc precoce; creamy white— "
Golden Fleece; bright yellow, Pompon.
Mlle. Elise Dordan; rose-pink and white.

I quite agree with the writer in regard to the very early varieties, that is, those that flower before September 1st, as their place is already occupied by the Aster, a similar flower and one much easier grown, and more satisfactory at this season.

First-class varieties that will come into flower as soon as the Asters are gone and continue up to the main crop are much appreciated by the trade and by the amateurs.

The Triumph Aster: Said to be an Entirely New Class.

This novelty in Asters, of which an engraving appears herewith, is being offered for the first time by Messrs. Haage & Schmidt of Erfurt, Prussia. From the catalogue of this firm we take the following:

It is undoubtedly the most beautiful of all dwarf Asters, not only with respect to the habit of the plants, but also as regards the form and beauty of the flowers. It forms an entirely new class, reproducing itself true from seed, and attains a height of 7 to 8 inches. In its earlier stages of growth it resembles the dwarf Chrysanthemum Aster, but later on, as the large and beautifully shaped flowers appear, they soon bend on account of their weight a little at varying angles, but do not droop so as to impair their beauty. The annexed illustration was accurately engraved from a medium sized plant.

The flowers of this Aster measure from 2½ to 3 inches across, and are of the most faultless Pæony-form, all petals being beautifully incurved. The color is a pure scarlet, rich and brilliant, changing when in full bloom to a satiny deep scarlet. The flowers are borne in great abundance. This novelty while the plants were in full bloom attracted great attention of all visitors to our gardens, and was pronounced to be the most perfect and most charming of all dwarf Asters cultivated up to this day.

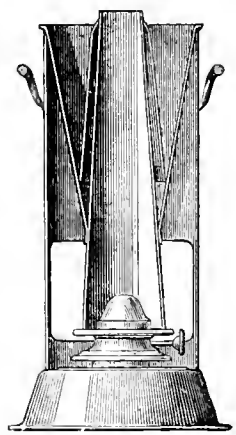
Nicotyl as an Insect Destroying Agency.

For some time a great number of English growers of plants under glass have employed nicotine vapor instead of tobacco smoke as a means of destroying insects under glass. Most of these, as we learn from our foreign exchanges, have discarded fumigation entirely in favor of the new system, the advantages of the latter over the former being sufficiently proved by one or two trials.

As we understand it, the vapor is provided by simply heating tobacco juice in a specially made apparatus. Since the method has been regularly used, it has been abundantly proved that while the vapor of tobacco juice is a deadly insecticide it will not injure the tenderest flower, and that for plants in bloom it is much safer than tobacco smoke.

Of several contrivances for applying the vapor, the one know in England as the Nicotyl Vaporiser, of which the accompanying is an illustration, is thus described:

"The apparatus consists of an annular vertical chamber, into which is dropped a conical cylinder, open at the top and bottom. The introduction of this open-ended cylinder divides the interior of the chamber into two annular portions: a smaller one, next to the center flue, which for the purposes of this description we will call the super-heater, and an outer larger one, which we will call the boiler. Below the vertical opening in the center of the chamber, which we will hereafter designate the lamp chimney, we arrange a lamp burner, and a reservoir for containing the paraffin oil, by the means of which the apparatus is heated. The boiler being filled to a certain height with the Nicotyl to be vaporised, and a certain measured quantity of oil poured into the reservoir, the lamp is lighted and allowed to burn until the whole of the oil is consumed."



A Nicotyl Vaporiser.

Successful Chrysanthemum Show held at Indianapolis, Ind.

W. H. LAWRENCE, BRIGHTWOOD, IND.

The first Chrysanthemum show given by the Society of Indiana Florists was certainly a thing of rare and exquisite beauty. The members were greatly surprised at what they did before the doors opened, and then they turned around and surprised the citizens of Indianapolis and hundreds of others from abroad. Each day the beauty of the exhibit was greatly enhanced by new and beautiful designs fresh from the greenhouses being placed on exhibit in a manner decidedly attractive. Each afternoon and evening the elite of the city graced the hall with their presence.

The effect on entering the door leading to these tastily arranged beds of flowers was more like looking on a picture than a reality and the ideas presented were entirely new to nine-tenths of the visitors. The bank after bank of flowers, the elaborate decorations, brilliant lights, music, the great evergreen bell clinging from the central chandelier, the monster pyramid of tropical plants, all surrounded with cut flowers, Orchids, Carnations, Chrysanthemums, and the choicests of Roses, made one feel as if they had, by some magical power, been transported to some tropical clime.

The cut flower display was a first-class show within itself. Our home florists made a good showing. Then came Fred Doerner of Latayette, with a car load; President Hill, Richmond; J. A. Peterson, Cincinnati, Geo. W. Doswell, Ft. Wayne; M. Hunt, Terre Haute; John G. Heinl, Terre Haute, Pres't. Carmody, Evansville; D. W. Cox, Crawfordsville; Henry Graham, Terre Haute; Peter Henderson, New Jersey; Jno. Henderson, Flushing, L. I.; E. V. Hallock, Queens, N. Y.; J. Everet, Philadelphia; Seibrecht & Wadley, Robert Craig, Philadelphia, and to all of them thanks! Many thanks are sent through your columns.

There were about 2,000 Chrysanthemums, of all varieties, shades and colors, in pots, arranged along the banks between the various aisles. The mammoth stage was beautifully ornamented with evergreens and flowers, and each night a picked orchestra of 60 performers discoursed excellent music.

During the week, until Saturday, the admission was 25 cents, and on the latter day the children filled the hall for one dime each. During the afternoon there was an auction of flowers, and such bidding on flowers was never before seen in Indiana. On the following Sunday morning there were more Chrysanthemums in the front windows of Indianapolis residences than will again be seen for many a day. The receipts at the door were sufficient to pay all the expenses of the exhibition and leave a handsome sum in the hands of the State treasurer. The writer was present from the commencement to the finish, and regrets that he cannot mention many things omitted that should receive unqualified praise.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. JANUARY, 1888. No. 4.

The New Year.

Rich gift of God! A year of time!
What pomp of rise and shut of day;
What hues whereln our Northern clime
Makes Autumn's drooping woodlands gay,
What airs outblown from ferny dells,
And clover bloom and sweetbrier smells,
What songs of brooks and birds, what fruits and flowers,
Green woods and moonlit snows, will in their round be ours. —*Whittier.*

IT IS dismal-looking gardening that leaves the veranda baskets hanging out all winter and the lawn vases no better off.

THE LAND of some nurserymen is foul with weeds and of the worst kinds too, such as Quack Grass, Canada Thistles, etc. The weeds on this account become scattered far and wide through adhering roots or seeds to the stock, packing material, etc., that goes out from these nurseries. We shouldn't wonder if some day the public would find out which nurserymen are the greatest transgressors in this respect and that there would be a wholesome discrimination shown against the guilty ones.

THE GOVERNMENT SEED BUREAU. Commissioner of Agriculture Coleman in his last annual report with propriety sides in with the widely prevailing sentiment in favor of abolishing the Seed division of his department. He recommends that the testing and distributing of new seeds, plants, etc. be turned over to the respective state experiment stations. This suggestion is one which without doubt will in time be adopted and the sooner the better. A distributing station in each state for that state, instead of a central one for all states with their needs and adaptabilities so widely at variance, is obviously an improvement in the right way.

A WORD IN TIME. When the agents come around this winter for your orders do not, if you have any faith in your ability to grow something better, invest in the Kieffer or LeConte Pear trees, however highly they may praise them. For the North, where the growing of good varieties is not difficult, the kinds named can hardly be rated as fit to eat; at the South they are better. What kinds to choose? For one dozen, ranging from the earliest to the latest, and reliable in almost all sections, we would say Bartlett, Summer Doyenne, Tyson, Angoulema, Belle Lucrative, Flemish Beauty, Howell, Louise Bonne, Sheldon, Anjou, Lawrence, Easter Beurre.

FRACTIONAL CURRENCY. Concerning the desirability of a re-issue of fractional currency or of silver certificates, for use in the mails, M. Lammar of Wisconsin remarks: I believe that if our Congressmen were for one year subjected to the vexations, loss and inconvenience of the present dirty, sticky, postage-stamp-exchange system to which the rural population is condemned we should get the much needed fractional paper denominations immediately. In cities and large villages fractional parts of a dollar can be sent, but only by paying tribute to the bank, express company or postmaster, but to the country there is nothing left but the stick-to-everything postage stamp. And I presume that people doing business in cities when they receive lumps of sticky stamps instead of crisp, convenient paper money are about as much annoyed as their country customers are—first the counting and recounting, and then the getting them exchanged into something that will not cling to you.

REDUCED FREIGHTS. The committee appointed at the last meeting of the American Nurserymen's Association to secure better freight classification on nursery stock offer some gratifying news. It is to the effect that the railroads embracing the Western Classification Committee, more than 50 in number, have granted the important concession of classifying *Nursery Stock boxed, or shipped in box cars, as* THIRD-CLASS *freight*. Heretofore this same stock has been classified as first-class, and frequently at one and one-half and twice first-class rates. Still, as will be noticed, the relief is but partial, and the gentlemen of the committee feel that until the same classification is secured from all railroads their work is not done. They have some active measures in view to which the attention of all nurserymen is called, and further information will be given by addressing any member of the nursery committee, as follows: S. M. Emery, Lake City, Minn., Chairman; J. B. Spaulding, Springfield, Ill.; U. H. Albaugh, Dayton, Ohio.

THE CHRISTMAS ROSE. Mrs. M. D. Wellcome, of Cumberland Co., Maine, writes that her Christmas Rose, *Helleborus niger*, took a freak not to wait for the holidays, but to bloom in September! "How lovely this singular plant is both in foliage and flower. Its deep cut, glossy evergreen leaves are alone ornamental. Why is this desirable plant, so hardy as to bloom amid frost and snow, so little known? Why do not florists catalogue it? I find it only in two catalogues. Why is it called *H. niger*—black—when it is pure white? There are many other varieties of different colors." To which questions we would answer that the fact of its being increased with some difficulty, hence its price being higher than most plants of its general class, and the further fact that its culture, although not very difficult, is yet not the easiest, are against its popularity. The same reasons explain why the plants are not more generally kept for sale by the catalogue men. We do not know why it is called *H. niger*, indicating black, when the flowers are white, unless it be from its dark-colored root. The usual season of flowering in this vicinity is March or April, but under some conditions the flowers appear in the fall, and if the plants are covered with glass coming true to name—at Christmas.

The Extremes of Gardening.

BY L. H. BAILEY, AGRICULTURAL COLLEGE, MICH.

The tendency of fruit growing and vegetable gardening is to specialize, to grow one or two products upon a large scale and solely for the money there is in them. Fruits which endure rough handling, long shipments, which are large and showy, are taking the places of the better fruits. To grow and to pick their own fruits is becoming less and less common among suburban residents, even among the farmers themselves in some places. We are all depending too much upon the markets. We are losing the miscellaneous gardens, which are made for all the good things which they contain.

The person who depends solely upon the city markets cannot know or appreciate good fruit. The freshness of the product, in most vegetables and fruits, determines its dessert value to a large extent. This modern loss of the home garden is emphasizing the value of fruits which simply look well upon the grocer's table, and is depreciating the refinements of horticultural pursuits and products. Quality must always suffer when dessert fruits are grown and handled by the wholesale. The products become simply so much bulk, so many pounds or quarts of gross food, which the boarding-house mistress uses in abundance because they are cheap. The flavor and relish of the individual varieties, the appreciation of delicacy of texture, the appetizing influence of the best and freshest products of the thriftiest garden, do not appear. The commercial tendency of the times is towards the money rather than the product.

But the situation is by no means a hopeless one. There are still an abundance of people who dislike the market and who are willing to pay well for the best, even though they cannot or will not grow it. Every town contains such people. They are ready to support a better husbandry. They make it possible for the gardener who is ambitious to exercise his skill in the production of the very best produce to make a living. I rarely advise my students to pursue horticulture on a large scale. I urge them to grow less and to grow better. Superior fruits and vegetables command a remunerative price at nearly all times. Let the grower establish his line of customers and then supply their tables for the season; or, at least, supply the choicest kinds. I still believe in the tidy horse and wagon which carries the fruit and vegetables directly to the door of the consumer while they are fresh and crisp. There is money in it. There is satisfaction to the grower who appreciates the best products. Or, if the grower does not care to raise a general line of fruits and vegetables, let him select two or three specialties, such as are not carried to perfection in extensive culture, and prosecute them to the utmost extent of his skill. I believe that the right man can even make money from true dessert Apples. The right man can do well with winter Pears. When it is once known among the best families that the grower is always to be relied upon and that he offers nothing in any way inferior, his success is assured. He may not attract attention from the magnitude of his operations, but he ought to draw the full measure of comfort and happiness from life. He carries a sure business and enlarges it only upon a safe foundation.

As a people, we cannot prosecute the best horticulture until we intensify our energies, and add to manual skill a mental appreciation of all there is of the art. The gardener should grow as well as his garden.

Horticultural Notes by Samuel Miller, Bluffton, Mo.

The old year that has just passed has not been a favorable one for the horticulturist in most parts of the country. Let us look forward to the coming season with hopes for better crops. In the meantime we must not forget the young trees under our care.

RABBITS AND MICE. During winter these two troublesome little animals must be kept off. A sure and simple remedy is given by a member of our State Horticultural Society, and not being patented, may be used by all.

Take fine wire netting, such as is used for window screens, shear into strips 18 inches broad, then into lengths to surround the trees and lap over considerable.

Lay your piece of screen on a table, lay a round stick on the edge, (a piece of broom handle will do), roll your wire around it, let it slide, and prepare another, etc. These can be opened out and put on the tree, letting one end rest on the ground; it will clash around the tree, will expand with the

growth of the trees for a few years, while all this time it will be proof against rabbits and mice, the round-headed borer, and the flat-headed one so far as it reaches.

Where this is not applied, the grass and weeds should be cleaned away from the trees to guard against the mice, and the trunks smeared with blood to keep off rabbits.

If a deep snow falls where there was weeds left around the trees in the fall, it should be tramped down, when it will freeze solid and prevent mice from getting near the trees, for it is at such times that they do the most damage. In the East one winter for me the mice barked quite a number of trees that were six inches in diameter clear around for a couple inches in breadth, clear into the solid wood; they would have been killed if I had not known how to treat them. As it was all were saved, as I cared for them, and kept apace with the rest in growth, the only difference perceptible being that the girdled trees bore more fruit than the others.

MISSOURI HORTICULTURAL SOCIETY. At our State Society's annual winter meeting at Booneville, Mo., recently, there was a large attendance and the display of fruit quite good for such a slim crop as we have had.

JAPAN PERSIMMONS. Among the new fruits, that attracted more than ordinary attention were some Japan Persimmons 10 inches in circumference, and weighing 12 oz, some without seeds and of excellent quality.

Now we know that the big pictures representing this fruit is no lie; but won't say as much for the agent who sells the tree for $1 per tree, telling his customers that they can grow them here. Three times have I tried them but they always winter kill. But they would make a splendid tub plant to put in the cellar at approach of winter.

The friend in the South who kindly sent me the above named, writes that he had a tree three years old with sixty Persimmons on that he intended leaving to see how the cold weather and freezing would affect them. At that time they had the mercury down to 27 degrees. Here our coldest was 11 degrees, and not far from us zero.

THE JAPAN PLUMS are also likely to become a popular fruit in the South. I have eaten them sent here from California and know that they are the largest (Kelsey's I mean) Plums grown and of excellent quality. But our seasons are too short to ripen this variety here, although I understand that some of the varieties may come to maturity.

WILD GOOSE AND MARIANNA PLUMS. Of our native Plums the Wild Goose still holds the lead for profit, being the surest of all I have tried; but for my own eating I want something much better.

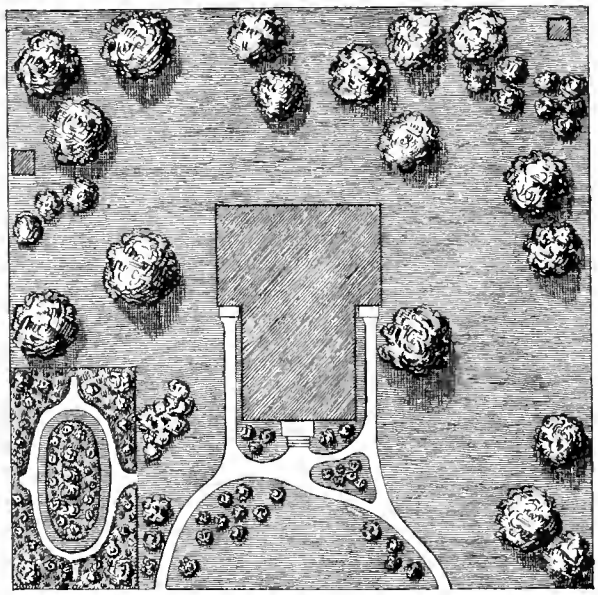
The much lauded Marianna does not come up to the mark laid out for it. Instead of being earlier than Wild Goose it is later; instead of larger it is smaller, and if it is any better, it is so little that I don't see it. Then it was to be Curculio proof, which it is not. My tree, that might have ripened half a bushel of fruit if all had remained that set, did not ripen one; the Curculio stung every one, and they fell untimely, while two large Wild Goose trees not thirty yards from it bore immense crops, and ripened them, too.

These are the facts as experienced here, and I give them as such. No doubt those who have a large stock of these trees on hand for sale will not like it, but those who had intended setting it out largely will perhaps thank me for it. A number of fruit men have written to me stating that my experience may save them a thousand dollars.

If any one wishes to try every new thing, it is all right, but my advice would be to go slow on such as have never been tried in the vicinity.

AS FOR STRAWBERRIES there are several varieties that do well in Illinois a little over one hundred miles from here, but that are worthless with me. Sharpless and Albany are not worth their room; can't keep the plants alive. Among the new ones Jessie pleases me the best of all. It will no doubt be *the* berry soon.

It has long been my ambition to grow a Strawberry as large as Cumberland Triumph with the quality of Ladie's Pine. This, I fear is too good a thing to be obtained. The drought last summer killed all my Pines, also the seedlings, hence the end of that.



School Grounds Embellished with Shade Trees, Shrubs, Lawn, Flowers, etc. The Flower Garden to the left front corner.

Schoolyard Improvement: Associations for the Work.

That the American country schoolyard as a rule is in a sad state of neglect in matters of tree and other horticultural embellishments is a fact widely apparent. It seems strange indeed that the one yard of a school district, and associated with that which represents the interests and aggregate wealth of an entire district, should so often be the barest, meanest looking yard, for people of that district. This is the more remarkable, as we consider that it is of the place devoted to educating and cultivating the minds of children, so tender and open to receiving impressions good and bad.

Were it the case that some great difficulty was in the way of adorning schoolyards with trees, vines, shrubs, plants, lawn, etc., not found when we provide these in our own grounds, the view might be different. But such is not to a serious extent true. The task of planting the yard is really a small one in most instances and not at all difficult to handle; the means in every school district are superabundant for the slight outlay required, and there should be enough willing hands for the work in men, women and children, to make it light indeed. The case is too generally merely one of "what is everybody's business is nobody's business," and the schoolyard remains unadorned.

But a time has come in which there is a wide feeling that a change for the better should be wrought in schoolgrounds. Naturally enough it is those who have a warm appreciation of horticulture that seem to be most exercised as to what should be done. The horticultural societies of the country, for example, are taking a hold of the subject in a way that promises well for good results.

The question of ways and means for the work is one that presents itself at the outset to those who feel an interest here. To our mind a solution is to be found in association work for the purpose, in a way similar to that upon which village improvement associations are so successfully conducted in many places. We are satisfied that much if not all that should be done could in most cases be better done thus by the independent concerted action of the leading families of a school district than by State aid or otherwise.

Where a live Improvement Association exists at present in a district, the work very properly comes within its province, provided there is no special society. But outside of this we are in favor of seeing a Schoolyard Improvement Association in some form, in every school district outside of the large towns, to look after this and related school matters. It should easily secure the active support of every man and woman in the district, and there would be no difficulty in getting the children interested in a way to tell well for making and keeping up the improvements from year to year.

To show what has been done in the instance of one country school district located in Erie County, N. Y., by the joint action of the residents and their children very largely, we present the accompanying engraving of the school grounds of said district somewhat modified. In this case the work was wholly a work of love, with hardly anything like system about it, and yet so long as we were acquainted with it the school grove and garden were well kept up, and we presume are to this day.

The garden features of this yard are sufficiently indicated by our engraving. The grove of trees was a natural one, and which had been chosen originally for the shelter it afforded. The trees had been judiciously thinned so that while heavy groups remained, to afford ample shelter, shade and beauty, yet the openings between sufficed to permit the growth of grass for forming excellent sward play-grounds. Here it may be added that this schoolyard is not cramped for room; it covers not far from an acre of ground in which respect it stands in marked contrast with those small patches of schoolyard everywhere seen in the midst of cheap farm lands, and in which not enough land was originally reserved for giving the grass a chance to form a decent sward.

But perhaps the most marked feature of this embellished schoolyard was the flower garden shown to the left front of the building. This was a fenced in plot, the fence of which was contributed by one resident of the district. The little area was devoted to walks and flower beds throughout. It was looked upon as the special domain of the girls, being on their side of the yard, but the boys were entitled to enter it, and they gladly did a share in keeping it tilled and in shape. The plants and shrubs set out were largely of the hardy class, and had been contributed from the surrounding gardens. Some annuals were raised from seed each year, and numerous Geraniums and similar plants found their way into the flower garden from the homes of the scholars.

This little garden proved to be a school garden in more ways than one. For example: Along the shady side next to the fence was a favorite place in which to strike plant slips, and many were the lessons in simple propagation that were indirectly imparted to scholars who met with little encouragement in such pleasant work at their

homes. And it may be added that the same plot served as a nursery as well, from which many a poor child carried home in triumph at the end of the summer's term a little well-rooted slip that it could call its own. The same thing happened with numerous offsets of hardy plants at the spring garden making time every year as old plants were taken up, divided and reset. So that while the district as a whole gave to the garden it enjoyed the advantages of the part the garden played as a disseminator of plants into numerous gardens within its precincts in the course of years.

This flower garden was far enough from the boys' recognized playground to the right of the school house that it rarely, if ever, suffered from intrusion by far-flying balls and the seeking for the same. We never saw the least disposition on the part of any boy to misuse his privilege of looking through the garden. On the whole the boys seemed as much interested in its beauty and completeness as the girls themselves. To all the little garden afforded a vast deal of recreation and happiness. It spread a halo of good influence over the scholars that was in value simply beyond estimation.

In this matter of throwing light on school yard improvement in our columns we invite the co-operation of the friends of the schools everywhere. Here and there throughout our country there must be many similar instances of improvements; these we would gladly illustrate and give place for having them described if our readers will favor us with the needed information.

Syringing Roses with Hydrant Water.

PETER HENDERSON, JERSEY CITY, N. J.

In response to the inquiry of A. A. H., of East Weymouth, Mass, as to whether the use of hydrant water in syringing and Rose forcing in winter is injurious, I would say it certainly is not, as the hundreds of acres of Roses grown under glass in the vicinity of New York and other large cities well proves; for I know of no one who grows to any extent but what either uses hydrant water or water from elevated tanks. The water in both cases would range from 40 to 50 degrees, and as syringing should never be done until the temperature of the Rose house is 75 degrees, the mean between the water at 45 and the temperature at 75 will be 60 almost instantly; and in 15 minutes the water syringed on the plants, wherever it has lodged on the soil or on the plants will have risen to the temperature of the house at 75 degrees; so there is not sufficient *time* for injury to result from the low temperature of the water. It is the long duration of extremes of temperature that does the mischief. You can take a Coleus or other tropical plant from one greenhouse to another, occupying a few seconds of time, without injury when the temperature is at zero; but expose it to the temperature at zero for two or three minutes and it is certain to be injured or killed outright.

Of course, if it was practicable to use water of the temperature of the house it might be slightly better to do so, but that could not be done except at a cost greater than the benefit would be. We have long ago proved that in Rose growing using water at a low temperature had no bad results. I remember in my early exprience, before we used hydrants or cisterns, that our water was drawn from a pond where the ice had to be broken to get at the water, and yet, even in that case, when the temperature was probably as low as 35 degrees, I never saw injury result; for the same reason already given, that the water at 35 degrees was poured on the soil of the pots or on the benches in the greenhouse at 75 degrees, making the mean temperature again 55 degrees, which of course at once quickly rose to the temperature of the atmosphere at 75 degrees.

I know that in many of the old European works it is often recommended to use water at the same temperature as the house, and if it can be done, certainly so much the better, but if you have not success in cultivating Roses or anything else, you must look for some other cause than that hydrant or cistern water has been used on the plants.

The Moon Flower and Other Ipomeas.

E. W. HARGADINE, FELTON, DELAWARE.

In the October number Peter Henderson proves conclusively, contrary to the earlier statement made in his "Hand-book of Plants," published in 1881, that the Ipomea grandiflora or "Moon Flower" is entirely distinct from *Ipomea Bona Nox*, or common white Evening Glory, which latter so many persons were induced to plant last spring, through the representations of seedsmen, much to their disappointment. The true Moon Flower certainly scarcely seeds at all in this latitude, as I have grown it for ten years and have not seen as many seeds in that time.

While the real Moon Flower is certainly the most striking representative of this class of summer climbers, there are two others not so well known which should be largely planted, as they produce a charming effect when planted with the white Moon Flower; these are Ipomea Learii and Ipomea palmata, or Ipomea Mexicana. The former is a true Evening Glory, opening its deep azure blue flowers at the same time as the white Moon Flower. The flowers are of the richest shade of blue imaginable.

The latter variety, the Ipomea palmata, is a morning bloomer; it has beautiful palmate or fine figured leaves, its flowers are of a pleasing shade of rose color. This variety has the advantage over the others of having a tuberous root, which can be kept through the winter as easily as a Dahlia; this is especially desirable on this account, as none of these varieties are disposed to seed, but must be propagated from slips or cuttings.

We have had growing on a wire fence this season, and flowering freely for the past two months or more, the three varieties intermixed. The two evening bloomers remain open till after the Ipomea palmata has opened its flowers in the morning, and during cool or cloudy days are open all day, presenting a sheet of blooms of different colors, the pure white of the Moon Flower heightening the beauty of the other varieties, the whole producing an effect strikingly beautiful. If any of your readers wish a beautiful screen or trellis of rapid growing vines let them try the above three varieties, which can be purchased of most florists at a reasonable cost the approaching season.

While on the subject of Moon Flowers it is worthy of note that the origin and history of the Ipomea grandiflora does not seem to be known, even by those supposed to be best informed. A year or two ago there were several inquiries in the Gardeners' Monthly as to the botanical name and origin. The editor of that journal called on Mr. Peter Henderson to answer these inquiries, which Mr. Henderson did, but not satisfactorily; though he was, I believe, the first florist to offer it in this country, and might have been supposed to be well informed as to its origin. I would mention that in reading one of Charles Reade's novels a year or two ago I met with a descriptive passage, which I quote from memory and which may throw some light on this subject: "In the far off islands of the Indian Ocean where the Moon Flower unfolds," etc. Some of your readers who are familiar with the writings of this celebrated English novelist may be able to give the exact passage. I have forgotten the name of the story.

An Effective Sparrow Trap.

Years ago that feathered Anarchist of Europe, the Sparrow, was induced to take up his home on our shores, and for a long time he received great consideration at our hands. But at length it was found that the experiment of bringing him over to rid our trees of insects was a most grievous mistake. It was soon seen that at his best the sparrow had no special liking for insects, while it is now demonstrated by leading entomologists that the little fellow in certain ways actually promotes the increase of some of our most destructive insects.

As an enemy to the fruit and grain grower, therefore, the English Sparrow proves to have no equal among our birds. Add to this the fact that the species multiplies with marvellous rapidity, and it is no wonder that in the older States like New York legislative action has been taken looking to their reduction, by making it a misdemeanor to feed and shelter them. As the problem of reducing these pests is looming up seriously the means for trapping them, which we herewith illustrate and describe, will prove widely interesting. The idea comes from a correspondent in Germany, who said that this and similar traps are fast coming in use in that country for effecting the Sparrow's decrease.

The trap consists of a box, of which figure 1 shows a front view, and figure 2 a lengthwise sectional view. This box is made of light lumber and is set in the favorite haunts of the bird. There is a small hole at the end of the converging opening from the front, which hole is defined and armed by the sharp points of a number of straight pointed slats extending inward. By this opening the birds can easily enter the box, but to escape is almost impossible. Escape is rendered all the less liable by means of lighting the bottom of the trap with glass across the front on the floor. There are two rows of lights, one at the extreme front, the other some six inches back, for keeping the birds from pressing against the outer glass to frighten away others by the discovery of their predicament.

As it is, the cries and commotion of the captured birds attract their followers outside, which crowd around in great numbers, and work their way into the opening, not to get out again of their own will. A small slide door at one side just back of the inner line of glass affords all the means necessary for removing the birds.

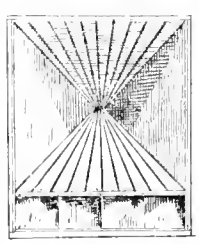


Fig. 1. Front View.

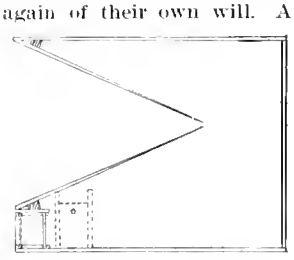


Fig. 2. Sectional View Lengthwise.

AN EFFECTIVE SPARROW TRAP.

The Postal Improvement Association, referred to last month, reports that it is receiving a cordial welcome from the people. And why should it not with such objects as these in view?

1. To secure reduced postage on seeds, plants, bulbs and clons.
2. The re-issue of fractional currency, for use in the mails.
3. Abolition of postal notes.
4. Issue of money orders for $5.00, or less, for a fee of three cents.

With W. P. Nixon of the Chicago Inter-Ocean as President, a man who has been quite successful

in his previous postal reforms, the friends of the association may be assured of good work to be done. But the society calls for active aid from those who are to be benefited by the proposed reforms—and who is not? The kind of help wanted is: *First*, for every person interested to write a personal letter to both his Representative and Senators in Congress to support these measures. *Second*, they must circulate petitions to Congress, agitate the matter in meetings and in the press. This is a work in which all should engage. Our readers who will apply at this office will be furnished with petition blanks and forms of letters to Congressmen gratis. It is wisely designed to have the needed pressure come upon the congressman direct from their constituents, and we especially want the tens of thousands of readers of *Popular Gardening and Fruit Growing to speak out strong in the matter.* The blanks are ready at this office; send for them, and get to work at once, *the earlier the better. Third*, money is needed for expenses. About $2,500 is required for printing, postage, clerk hire etc., to place the matter effectively before the parties interested. Some parties will subscribe directly to the Association's funds and it is hoped that all who can will liberally follow this example. The main reliance for funds is upon membership fees. It is hoped that all nurserymen, seedsmen and florists will help the cause by joining the Association and sending their membership fee of five dollars to the Secretary of the United States Postal Improvement Association, Springfield, Mass., for which a certificate will be issued to each. Every dollar will be properly accounted for. Let there be prompt attention to this work on the part of all interested persons from ocean to ocean, and such will be the pressure on Congress that relief should come speedily.

A HEAD OF WHITE CAPE BROCCOLI.

ASPARAGUS OR BRANCHING BROCCOLI.

The Culture of Broccoli.

Broccoli is a variety of the Cabbage species having, in the type, the young inflorescence condensed into a fleshy edible head, as shown in the left hand figure above. In this respect it resembles the Cauliflower. It differs from that variety by heading earlier in the season, as also by the edible part being of a somewhat different texture from that of the former.

One variety of Broccoli has the branching form of growth shown in the right hand figure. This is called the Asparagus or Sprouting Broccoli. It is considerably esteemed in France and other European countries, but we are not aware of its being cultivated in this country.

To grow Broccoli successfully it is necessary to have rich soil of a good depth, in an open situation, where the plants can have an abundance of sun and air to keep them sturdy. The greatest hindrance to its culture in America is its liability to suffer from early droughts, for a severe dry spell of three or four weeks duration may destroy the whole crop. When the crop does succeed it pays to those who raise it for market a handsome profit. In the New York market Quinn tells us that well-formed heads seldom bring less than from twelve to fifteen dollars per hundred, and always in brisk demand. The market is never over-stocked with Broccoli.

For early summer use the seed of the Broccoli may be sown in the open ground about the 1st to the 10th of September, and pricked out into cold frames in the latter part of October. Before cold weather these frames should be covered with sash, and the young plants receive the same treatment as that recommended for Early Cabbages. Early in April they may be transplanted into the open ground. They require a very rich, deep and rather heavy soil. They should be set out in rows two feet and a half apart, and the plants two feet apart in the rows. The ground should be frequently hoed, preventing the appearance of weeds and grass. By the middle of June the heads will begin to form. If the weather is very warm the heads sometimes "button," or run to seed. By bending some of the large leaves over the young heads, to shade them from the sun, buttoning may be prevented.

For a fall crop the seed should be sown about the 1st of May, and transplanted into the garden or field early in July, setting them the same distance apart, and cultivating them in the same way as the spring crop. With moist, cool weather in September and October the Broccoli will head when planted on good soil. Besides the regular quantity of barnyard manure, an application, at the first hoeing, of three or four hundred pounds to the acre of Peruvian guano will be found a good investment in growing Broccoli for profit.

There are only two varieties that are grown for market to any extent:

WHITE CAPE.—This is the most popular kind of Broccoli, and looks very much like Cauliflower, the only difference being that the heads are a creamy instead of a pure white.

PURPLE CAPE differs only in color from the White Cape. In other respects it is very similar; and when the plants are strong and healthy they are of first quality, fully equal to any other sort.

Notes on New Vegetables.

BY A MASSACHUSETTS GROWER.

A most important principle of Nature is reproduction; the producing of new varieties. For the last 10 or 15 years she has been unusually prolific in giving to us improved garden vegetables. For years I have made buying and testing many of the new novelties offered a specialty, thereby determining the merits they possess over the older kinds.

Early Cabbages.—*Early Wakefield.* This, as first early, leads all others and is more widely grown than any other. Although an old variety it has been so increased in size from the original type that the new select strains are much procured by market gardeners. Very reliable in heading and fine in quality.

Henderson's Summer. This is a larger Cabbage than the Wakefield, and has for some years ranked in the estimation of market gardeners as next to that variety in earliness, and as producing a much heavier crop. Very reliable to head and handling well in marketing. Quality good.

Early Peerless. One of the latest introductions of the early varieties. It is a cross between Early Wakefield and the Improved Brunswick. Larger than Henderson, earlier, sure to head, and remains longer without cracking than any other known variety. Quality unsurpassed by any other kind, remarkably sweet and tender.

All Seasons. This is a still newer variety than the preceding. It is a large growing Cabbage, head thick and solid, very tender and good flavor. An excellent second early variety.

Warner's Stone Mason. A later variety than either of the preceding kinds. As a Cabbage for extensive field culture and reliability for making large, solid heads and keeping qualities for winter marketing, this ranks as No. 1. Quality fine grain, tender, and sweet.

Dead Head. An improvement on that old and well-known variety "Fottler's Brunswick." It has a larger, deeper and more solid head than the old type, and one of the most desirable for fall.

Early Peas.—*First and Best.* This variety has been before the public for a number of years, and in our trials during that time has, as its name implies, sustained the high claims made in its favor. It is a smooth, white Pea, very productive, fine flavor, and matures in two pickings.

Alaska. This is claimed as the earliest variety in the world. In trials the past two years it has proved very early, but not as vigorous in habit of growth as First and Best. A bluish Pea in color, sweet, and of fine flavor.

Bliss' American Wonder. Truly a remarkably dwarf variety. Produced by crossing Champion of England and Little Gem varieties. A Pea of surpassing richness of flavor, very dwarf in habit of growth, but producing immense crops of large, well filled pods. This variety seems better adapted for family gardens than other.

Horsford's Market Garden Pea. In our trials of this variety for the two past years it has proved the heaviest yielder of any. Pods of good size, peas of sweet and rich flavor, vine vigorous and very healthy. A decided acquisition.

Strategem. This is a remarkably large wrinkled Pea of vigorous growth, pods large and well filled with Peas of delicious flavor. Of all varieties of recent introduction this takes the lead. Its only fault, rather tender about coming up. A variety of great merit.

Telephone. This, like the preceding variety, is a large vigorous growing Pea. Pod is very large, five to six inches in length, Peas very tender and unsurpassed in flavor. Every garden should try it.

Pride of the Market. Another novelty in Peas, and highly esteemed by all who have tried it. Grow about two feet high, branching laterally, very productive. Peas large and fine flavored.

Early Beets. A very profitable crop in the vicinity of large cities, and market gardeners have sharp competition to get the first earliest.

Early Eclipse. Ever since its first introduction this variety has taken the lead as the best early kind. It possesses the fine qualities demanded as a table beet in a greater degree than any of the old varieties. Very rapid in growth of small top, deep blood color, fine grain, very sweet.

Early Bastians. A much prized variety with market gardeners as a bunching beet. One important characteristic of this is that the beets will grow much thicker in the rows than other kinds, allowing the seed to be sown thicker, and the Beets to be pulled through the season, still having a fair stand in the fall. Very sweet and tender, but not as dark red as the Eclipse.

Edmonds. This variety has not been prominently before the public until within a few years. Since it has become more widely known, its fine table qualities, deep crimson red color, and sweet, tender flesh, and the fact of its always growing smooth and handsome, make it eagerly sought for by every market gardener who knows of its superiority above the older varieties.

Early Potatoes. *Hampden Beauty.* This variety is one of the more recent introductions among the sorts suitable for early market, and has not been as extensively tested as

these, but appears to be of great promise, being early, productive, and quality good.

Charles Downing Potato. This is one of the latest introduction and was originated in Vermont three years ago. It has not yet been largely disseminated, but wherever it has been tried as an early productive Potato it ranks very highly. In our tests the first season, as to earliness, productiveness, and freedom from disease, and also as to the finest table qualities, this variety led all others.

Queen of the Valley. A medium early variety, immense yielder, tubers large and even in size, with but few small ones. Quality dry and mealy and of very fine flavor. The past season, in common with all late varieties, this has rotted badly.

Empire State. Originated in New York State; and was introduced a few years since as the best late Potato in cultivation. This yields immense crops of large white tubers, late in season, but very white and dry when cooked for the table, of excellent flavor. Crop the past season almost a total failure from rot.

Dakota Red. A very large sized late variety. In my trials it has not given me satisfaction. Although an immense producer, the tubers are apt to be watery and coarse in texture, and does not sell as readily as most others.

The Kniffen System of Vineyard Management.

B. P. VAN DUSEN, NEWARK, N. Y.

Thousands of acres trained by this method are giving general satisfaction. The system is especially adapted to the strong, heavy bearing, straight growers, and not as well to weak growing sorts or such as are liable to drop or ripen their leaves early.

Tying up the green wood during growth, as in the Fuller System, produces more and better wood, as a vine grows much stronger thus than if checked by hanging down, as in the present system There is also more danger of the leaves ripening or dropping if the growth is checked. For that reason it would, as in the latter system, not be as good for the Delaware, Catawba or Lady, and just the thing for the Niagara or Concord. For the same reasons it would be better adapted to rich land than poor. Let it be added that checking the growth of vines which grow strong from any cause increases the quantity and quality of the fruit.

In the Kniffen system of training but two wires are used. The first is 3 to 3½ feet above the ground (I consider the latter better), and the second 2 to 2½ above it. The wires are thus sufficiently high to keep the fruit free from dirt, to provide a free circulation of air, and you can pass easily under them from row to row.

PREPARATION. In preparing for a vineyard the land should be plowed as deeply as possible. A subsoil plow following and loosening from 16 to 18 inches deep is still better. A vineyard once planted is planted for ages, and it pays to do it well. The roots should be set at least 12 inches in the ground, and in very light soil, or exposed places still deeper, with 3 or 4 inches of surface soil beneath them. A few wood ashes, or two or three handfuls of a phosphate containing plenty of potash, sprinkled in the bottom of each hole at planting before putting in the surface soil referred to, will assist the young vines. Digging for planting can largely be done with the plow.

FIRST YEAR. When the buds on the newly set vines have started a few inches, usually at time of first hoeing, cut off all but the strongest, causing the vine to grow to a single cane. (Fig. 1.) After the leaves are off in the fall, cut close all except the strongest cane and cut that back to within three buds of the ground. Plow the ground towards the vines, plowing to a dead furrow. It is better not to plow at all than to turn but a single furrow against the vines.

A mulch of a few forkfuls of coarse manure or straw should be scattered over the roots to protect them, both at the approach of the first and second winters in cold climates, as the roots of young vines are particularly tender.

SECOND YEAR. In the spring plow to a back furrow in the center and uncover any vines plowed under. When the new canes are a few inches long rub off all but the strongest, giving preference to one near the ground. Pinch the ends of all canes which are making a thrifty growth when about three feet long. This will start the laterals desired for fruit upon the first wire next season. If the vine is weak, allow it to grow in a single cane. On the other hand, if your vine-

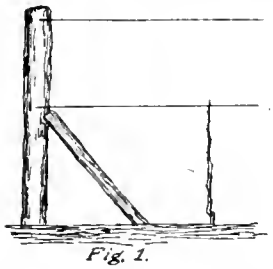


Fig. 1.

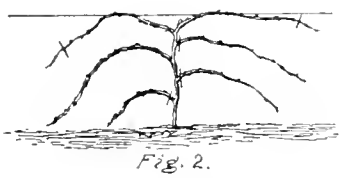


Fig. 2.

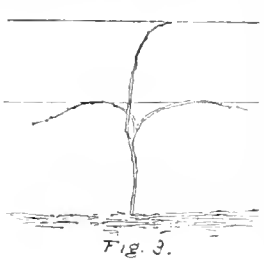


Fig. 3.

THE KNIFFEN SYSTEM OF TRAINING, UP TO THE FRUITING STAGE.

yard or a vine has made a very strong growth, permitting of three well ripened fruiting laterals, (see Fig. 2), and you desire to take fruit from both wires the next season, you then select the two nearest the end for the lower wire, as before. Select another lateral below or nearer the ground, for binding on upper wire to leave from 2 to 6 buds. The trimming in either case may be done in the fall after the leaves are off, or during the winter or early spring, and should leave the vines as shown in 2 and 3 respectively.

THIRD YEAR.—Two good laterals nearest the end of the 3-foot upright cane of the previous year having now been selected for fruiting on the lower wire; these should be cut back to from 4 to 7 buds each, and all other branches either on the arms or center vine be cut off. This will leave the vine looking like Figure 2 without the upper cane. In the case, however, of very strong vines, as referred to above, in which three bearing laterals are to be provided, the appearance should be like figure 2 as it now is, namely, two laterals for the lower vine and one reaching to the upper, all of which should in general be treated alike. Vines of weaker growth having but a single cane, of fair growth and well ripened wood, such can be left from three to four feet long and tied to the first wire for fruit. In all other cases of weaker growth cut vines back to 3 buds, the same as the first fall. This will in the end make a more choice and even vineyard.

During the third summer the vines of weaker growth which were cut to 3 buds above ground should be handled the same as directed for second year for moderately thrifty vines.

Vines which have laterals for fruit on the first wire only must be trained to have an arm prepared for the upper wire by selecting a new cane which starts below the arms. Rub off all other new canes below them. At the end of the third season you will, with having three grades of vines, as referred to, find the weaker ones appearing about like Figure 2, the fairly vigorous like Figure 4, and the stronger ones that were provided with a third lateral for the upper wire, like Figure 6. Following the end of this season each grade should be trimmed as indicated by the cross lines, and this will leave them like Figures 3, 5 and 7 for fruiting the next year separately. It is well to cut a lateral or two back to one bud, as in Figure 6, when you would like an arm next year. Then you are quite certain to get it. When buds are well started, during this and each succeeding year rub off all which start below the division in the vine below the wires. Always take the arms for lower wire from the short arm of the permanent vine.

LATER YEARS. At the end of the fourth and each succeeding year cut the arms which have carried the fruit back as close as possible, and leave arms for the succeeding year. If you do not find a good arm starting close to the center vine, take the first of the good laterals starting from the arm, cutting back to it. Its having had fruit on is no objection.

Always select for fruit the well ripened, and other things being equal, take the shortest jointed wood of medium size. From ¼ to ¾ inches in diameter are better than larger. Avoid the extra large thrifty, long jointed canes. By examination you will find that such have long buds. They are not as sure to start, and will not produce as much or as fine fruit. If you have no other except such large canes cut the laterals which you are quite sure to find growing from it back to two buds, leaving in all about as many buds.

Beyond the pruning thus suggested some summer pruning, intelligently done, will increase both the quality and quantity of the crop. To show when it should and should not be done would require more space than I feel warranted in including in this article. Cultivate a vineyard well during the early part of the season, or still better, plow it shallow until the middle of July, but not later than August 1st. The last plowing turn towards the vines and sow rye or oats, to be plowed under in spring. This will increase the fertility of the soil and give the roots a fine winter protection.

Leaving a permanent branch on the vine below the wires, from which to take arms for the lower wire, is a modification of the Kniffen systen, corrects its most serious defect and ensures the same growth and amount of fruit upon the lower as upon the upper wire. In the original method you have but one straight vine from the ground to the upper wire and the lower laterals are taken directly from its side. The objection to this is that the sap will always flow more freely to the end of the vine, making the strongest growth (and the largest part of the fruit) on the upper wire. Often with a large amount of growth on the upper wire there is not sufficient below from which to select good fruit arms. With this permanent division in the old wood the sap flows as freely in the lower as in the upper arm, which increases the capacity of the vine.

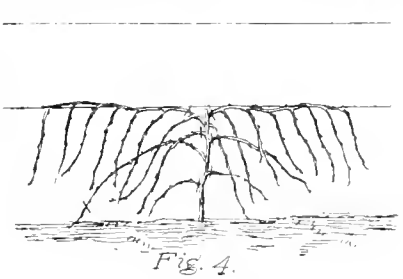


Fig. 4.

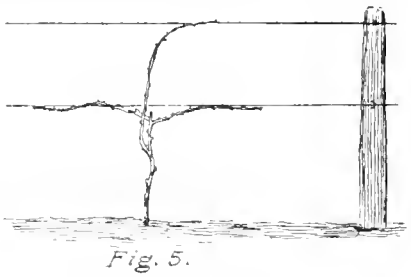


Fig. 5.

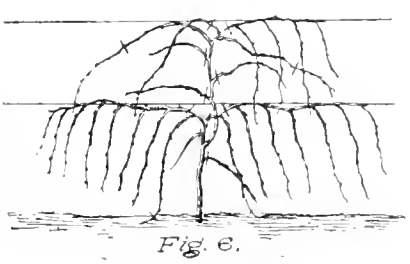


Fig. 6.

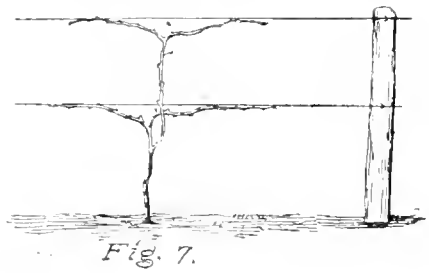


Fig. 7.

THE KNIFFEN SYSTEM OF TRAINING BEARING VINES.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

WATER CRESS.

This is a very palatable dish to a large number and should be more largely grown.

We have grown it successfully along a running stream of water, the soil being of a loamy, mucky nature, and have also seen it growing on gravelly soil. Sow seeds in early spring. The plants can easily be obtained and set along such running streams, and these will rapidly spread and increase.

WINTER BURNING OF STRAWBERRY BEDS.

We are asked the question if we would burn over the beds in winter. By no means. It might be the ruination of them. The proper time is after they are through bearing, so that they make a strong new growth before winter sets in. And here we would say that if mulching material is not handy and plenty to cover the ground well after weeds are cleaned out in the fall, it is better to let weeds or grass grow among them from August or September as a protection through the winter and clean this out in the spring. Some growers sow buckwheat or oats at the North among the plants in August, and this being killed down by the frost gives the best of protection and mulch.

DO FRUITS DETERIORATE?

Practical men take both sides of this much mooted question. We remember while living in Indiana that the Wilson, grown by us for years and often renewed, would deteriorate, while plants of the same sort ordered from other States would produce well. It must, however, be remembered that as a rule new sorts are grown with great care and attention and often renewed, and seem to keep up their productiveness and size well. Again, we believe that some soils are peculiarly adapted to certain kinds of fruit, like the Strawberry, while others are not, and that on the first they may not deteriorate if renewed often and well fed, while on the other soil they soon run out.

We have noticed the practical talk from J. M. Smith before the Pomological Society, in which he takes the ground that "the Wild Strawberry is no better nor worse than 2000 years ago, and that wild fruits do not deteriorate or become extinct."

Plant these wild fruits on soil different from what they are found growing on and let them run and we think they will soon run out, and even if cultivated they must be renewed. Again Mr. Smith says "all improved varieties, in order to succeed, should have the same conditions under which they originated." A variety that originates and succeeds well on a sandy soil may grow there years and years with proper attention and cultivation, while if planted on a rich virgin soil would be of little value, and *vice versa*. We concur in Mr. S's closing remarks.

WHITEWASHING TREES.

Our old friend, Prof. Riley, does not approve of this and says: "In reality only one of the four troublesome insects that infest shade trees can in any way be affected by the wash, and that is the Tussock Moth. So far as the whitewashing reaches a certain number of the cocoons will be loosened and exposed to the rains or rubbed off by the washing, and it may be possible that the lime will affect them, though there is no evidence that such is the case. But it is of no earthly use against the Bag Worm or the Elm-leaf Beetle or the Web Worm."

Now, while we have the highest respect for the Professor, we must say that we have whitewashed trees for years, with the most beneficial results. We have practiced on thousands of fruit trees, and whenever and wherever tried it has improved the health and appearance of bodies and limbs so far as applied at least 100 per cent. We began it thirty years ago in Northern Indiana and have followed it up nearly every year, and one needs but to see trees on which it has been applied and compare them with trees that have not been so treated to see the difference in health and appearance.

THE CLINTON GRAPE AND OTHER WINTER SORTS.

We do hope that this old sort will not be entirely discarded. It is an "iron-clad" and will succeed where many others fail, and if allowed to remain on the vines until "dead ripe" it is certainly excellent, while its productiveness is marvelous, and, too, once planted and started to run over a tree it will take care of itself for a great many years. It is also a good keeper, and here we would say that among the best keepers are Isabella, Catawba, Roger's 15, Oneida, and Vergennes.

The best plan for keeping Grapes is to wrap each bunch in paper and lay them away in shallow boxes in a room that will not get too warm and where mercury will not drop below 20 to 30 degrees.

ICE HOUSES FOR FRUIT.

Every fruit grower should have an ice fruit house to keep many kinds of fruit in. Parties in Ulster County have told us that they have kept Concord Grapes till midwinter, getting six to eight and even ten cents per pound, while if sold when taken from the vines they would have brought but two to three cents per pound. The Rural World gives a very simple plan as follows:

Those who have not good frost-proof cellars in which to store fruits and vegetables can easily and cheaply make a house that will answer the purpose admirably. A room built with double walls, having a two foot and a half space between, boarded up on the inside and out, the space closely filled with cut straw, a double roof with a three-foot space, and also filled with straw, will keep quite an even temperature the year round.

Such a room is all that is needed for an ice house, and now is the time to be thinking of making one for this purpose. The two ideas will work together well. Both the fruit and the ice need a low temperature for their preservation, and what provides it for one will for the other. Therefore, simply enclose more space, divide it into two parts, one for fruit and vegetables, the other for ice. A supply of ice will greatly aid in preserving the summer fruits, by simply putting a piece in the fruit room daily.

To be able to keep fruits fresh for a long period is a source of profit, and to have a supply of ice during the hot weather is a luxury that is so cheaply obtained it is simply astonishing any farmer does without it.

The Farmers' Review adds to the above: Instead of the two and a half foot space filled in with cut straw an air space made air tight by the use of building paper and not more than twelve inches in width is both cheaper and better. The straw or other filling absorbs moisture and rots out the lumber. There is no better non-conductor than a dead air space.

We have the promise of full directions for building a fruit ice house from a well known writer, which we hope soon to have for the columns of this paper.

THE NEW SOUTH.

For three years past we have spent considerable of our time in North Carolina and Virginia, and from observations and conversations are satisfied that what is needed is the proper system of cultivation and feeding to make a paradise of the South.

The practice of cropping heavy every year, and on much of the land two crops in a season, has "run out" a very large portion of the land, but the fact that it comes up so quickly by applying but a small quantity of manure or by seeding down with Grasses or Peas, etc., with some fertilizers applied when sown and this ploughed under, and the crops it produces after such treatment, is sufficient to prove that it has the "bottom" if only cultivated right.

The animal and vegetable kingdom are the same in this respect, that to have good results from them the food must be sufficient. We have in mind now a farm in Virginia that has been badly run, and on which we were shown a piece of corn, a portion of which was producing a large crop, while on another portion the crop was light and poor. On inquiry we found that Sweet Potatoes had been grown the previous year and a small quantity of manure put under the ridges, on which the Potatoes were planted; on this ground grew the large stalks that produced so abundantly the following year. Near by were forty or fifty rows of Strawberries. Six or eight of these rows were very luxuriant, while the balance were poor enough. On the plat where the first were planted a small quantity of manure had been scattered and plowed under; the other had none, hence the difference.

A Red Raspberry plantation on the same farm showed like results with like treatment. We noticed on some market farms near Richmond, where manure had been applied, as fine truck and Strawberry plantations as one could find in any section, all showing that the soil is naturally good and will produce if properly fed and cultivated.

The land is largely a clay loam with a hard clay subsoil. What is needed on most farms that we saw is a good system of drainage, which we think might easily be done with the "mole" plow used at the West, or even a system of subsoiling—that is, running a subsoiler after the common plow, loosening up as deep as possible, but not throwing much subsoil to the surface. Turnips grow freely on most of the farms, and as seed is cheap and if sown so as to grow thickly and make a dense top, and this ploughed under, it will be found an excellent fertilizer.

We question the propriety of using commercial manures so constantly and freely, as it draws from and gives nothing back, unless used for green crops to be plonghed under. It acts like some stimulants on the human system—stimulates for a short time, but reaction comes and leaves the body in a worse condition than before. What it needs is food that is lasting.

The trouble (and therein will prove the failure) with many who go South, they plant too largely with too little preparation, and especially is this so with fruit growers. Better get one acre in good order and properly ploughed and marked and planted than five to ten acres without the proper preparation.

Most farms that we saw were admirably adapted to stock raising, because of having so large a proportion of bottom land that gives grass the year round, and by keeping stock and using the manure on the upper land farms can easily be brought up.

A large share of the land is covered with second-growth timber, which when cleaned produces good crops and is easily kept up. And as for market, the great cities of the seaboard are so near the best prices can be obtained.

Then again, most fruit crops there are more certain than in over four-fifths of the Northern States.

In sections where we went we found a very large proportion of the inhabitants Northerners, and very social and hospital.

In closing this, however, we caution everyone from going South with the expectation that success awaits them without using their brains and hands.

Fruiting the Native Plums.

D. B. WIER, LACON, ILL.

Mr. Henry Lutts in your September issue writes of the Wild Goose Plum: "It is perfectly hardy here, blossoms freely, but fails to fruit heavy through not fertilizing well. I have it from good authority that by planting other varieties of the same *species* (near it) this defect may be remedied."

The italics and parentheses are mine. Mr. Lutts has been wrongly informed according to my 25 years' experience with this Plum.

The Wild Goose belongs to the southern type or so called species of Native Plums known as the Chickasaw (*Prunus Chicasa*) and is not fertilized or pollenized by other varieties of that species here, or at least by none of the many varieties I have tried it with, namely, Newman, (a typical variety of the race) Golden Beauty, Peach Leaf, etc.

But its flowers in 23 years have never failed of being fully fertilized by the pollen of the Miner in bloom quite near it. The well-known Miner shows a complete cross or hybrid between the Chickasaw and the Northern Wild Plum (*T. Americana*,) and so far as tried here it is fertile with and fertilizes all the Native Plums that are infertile with their own pollen. The Miner is generally barren with its own pollen, but enormously productive when growing quite near the Wild Goose and (so far as tried) all other races, species and families.

Therefore, when I am asked how to fruit the Native Plums abundantly my direct answer is: Plant them in rows running with the direction of the prevalent winds of Spring, with the trees not over six feet apart in the row and *every third tree a Miner*. The rows may be 15 to 20 feet apart. This places trees of all the varieties we wish to plant within six feet of a Miner. Proper fertilization is *the one* and *only* secret or necessity in fruiting the Native Plums.

I have here trees of Miner and Wild Goose growing so that their branches intermingle that this past summer matured their twenty-third crop in succession without a failure, and also other trees that have done the same thing where both were top-grafted on the same tree. Therefore all barren, isolated Native Plum trees can be rendered fruitful by budding or grafting the right varieties into their uppermost branches.

Which would be the right varieties? Time and a vast amount of experimentation alone can determine. I have fruited thousands of varieties of them here, and the best rule I can give, and it is good enough for the present, is to plant with the Miner as above, also bud and graft with it.

The Native Plums, such as we have now, are a fruit of the greatest value, especially for the Northwest, and are destined to be the parentage of the finest and most valuable of all our fruits. Therefore we should all endeavor to learn their absolute requirements for fruiting.

Last winter, at the request of Prof. C. V. Riley, Chief of the Entomological Division of the United States Department of Agriculture, I prepared a paper giving my studies up to that time on "The Native Plums and the Plum Curculio."

This paper shows that the Plum Curculio has practically nothing whatever to do with the very general barrenness of these Plums, and gives proofs and reasons in detail. The present season's observations have conclusively proven my position in every particular. The article is published in Bulletin No. 14, and is now ready for free distribution, and can be had by addressing the Department. Or what is very much better, I will mail the Bulletin from here on receipt of 25 cents, with my answer to Prof. Riley's criticisms on my paper, with proofs and new valuable facts.

The facts now seem conclusively to show:

1. That the Curculio does not to any injurious extent breed in the Native Plums.

2. That eggs laid in these Plums do not prevent their reaching maturity.

3. That she lays her eggs in them in preference to most other (perhaps all) fruits.

4. Where these Plums are fruiting in great numbers in masses near together, they bear great regular crops and protect other fruits from the Plum Curculio, and practically exterminate that insect.

Red Raspberry Culture for a Near City Market.

Favorable soil and climate aside, the principal requisites for success in profitable Red Raspberry culture are a good market at no great distance, and a good supply of pickers in the neighborhood. It is a fruit that does not stand shipping well, being apt to become mushy, which renders it unsalable.

Enough pickers should be near at hand to get the berries very promptly picked at just the right time. Especially is this true in a rainy season, for then often it is necessary to push the picking to the utmost; if picked when wet they spoil very quickly, and if left on the bushes a day too long in wet weather they get overripe and soft, making it next to impossible to get them put up in good shape. If pickers are rather scarce they are apt to get tired of picking and demand higher prices as the berries begin to run small, which is always the case in a dry season. We find it a good plan to pay only a part, say two-thirds of their earnings each day, with the understanding that faithful picking to the end of the season is necessary for securing the balance. We make sickness and sometimes other good causes for quitting earlier an exception to this rule frequently.

A gravelly soil inclining to sand is the best for this crop, although it can be grown successfully in most any soil, except a stiff clay, if it be thoroughly underdrained and worked. It is not necessary that the soil be very rich at the start, for manure can be applied to rather better advantage after the first season's growth.

The plants should be set 1½ to 2 feet apart in rows 5½ to 6 feet apart. Great care must be taken when setting the plants not to allow the roots to dry at all, as they are very easily injured. It is not advisable to plant on a drying, windy day, unless the roots are puddled or planted out of water. Root exposure in a wind for but ten minutes may work injury to cause the difference between success and failure. A good way of planting is to put the spade in the ground 8 or 10 inches and move it back and forth so as to leave a hole 2 inches wide and as long as the width of the spade. A boy can follow with the plants, placing one in each hole, drawing the soil in with his foot and treading it firmly on each side of the plant with his heels.

At the end of the first season the plants should be heavily mulched with manure, which will serve the double purpose of fertilizing the plants and smothering any weeds that escape the hoe. If well planted and cared for a light crop can be picked the following year. No pinching back should be done in the summer, as that causes the canes to send out laterals which do not ripen, but all canes should be cut back in winter or early spring from 6 to 18 inches, according to the strength of the canes and the amount of manure given them; the stronger the canes and the more manure used the less cutting back is necessary.

After manuring in the fall the soil should be thrown up to the row on each side with the plow and in the spring this soil can be used to cover any weeds not smothered by the manure. By working and hoeing the ground away from the row during the coming summer it will get pretty well leveled down and will be ready for the annual tall mulch of manure and plowing. If any Blue Grass or other biennial weeds should have gotten a start an extra heavy mulch of manure on them will destroy them at much less expense than is possible with the hoe.

If well cared for and kept clean a Red Raspberry plantation can be left for a number of years. The only disadvantage of an old plantation is that Blue Grass is apt to take possession of it, and the annual plowing to the rows inclines to make the soil too high along the row.

For marketing, this berry should invariably be put in pint baskets, in which shape they will usually bring considerably more than enough to pay for all extra cost of the baskets. The crates should hold from 12 to 36 pints, to suit different customers, and must be made so the baskets will fit snugly to avoid chucking. The berries should be picked every day to command the highest prices, and should be placed in the retailer's hands immediately after picking if practical. A temporary packing shed should be erected near the middle of the patch for convenience in packing, keeping accounts of pickers, etc.

Currant Culture for Market.

E. MORDEN, NIAGARA FALLS SOUTH, ONTARIO.

The largest crop of Currants may be looked for on a deep, mellow clay loam.

They do fairly well upon a great variety of soils, but a dry sand will not produce very large crops. There is very little danger of making the ground too rich, or of ploughing it too deeply. They may be planted 4x4 or 4x5, and cultivated both ways. After the ground is carefully marked, I use a narrow one-horse plow, the landside of which coincides with the mark. By passing the plow two or three times along the furrow we secure sufficient depth. At each cross mark a two year currant bush is dropped and a man passes along and plants them with great rapidity by using his feet. The furrow is readily filled in later on with the cultivator.

A plantation of Currants or Raspberries should not be continued for more than 8 or 10 years. This is one of the secrets of success. How often we hear the amateur complaining of the miserable crops of Currants and Gooseberries from those old rows. He expends much labor and much manure and gets a small supply of small fruit. Plant anew, and dig up that mass of roots dead and dying. Black Currants are not generally a success upon our soil.

Of the Red Currants I have grown the Raby Castle, an English variety, for a dozen years with much satisfaction. It is a rapid grower and inclines to take the tree form. Its foliage resembles that of the Black Currant, and it is held through the heat of summer until late in autumn. It therefore ripens its fruit perfectly and holds till late in the season, when we have a ready sale. This variety should succeed in the South.

It is by far the most productive Currant that I know of. The fruit is not as sour as most others, and is not much larger than the Red Dutch.

The tree form is very convenient in cultivation and in picking. Such trees of course begin to fail in 7 or 8 years. Then we dig them out and rely on later plantings.

I grow about a ton of Currants annually, and find them more reliable than any other fruit, and about as profitable. We must of course poison the worms. To do this we need Hellebore. The modern mixture sold is remarkable for its mildness.

Winter Heaving.—Some Important Facts and Conclusions.

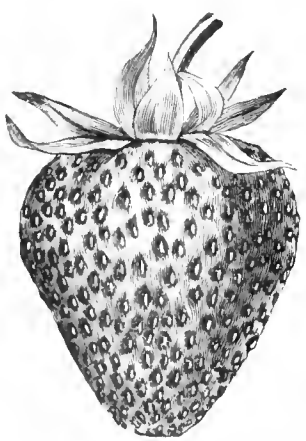
D. S. MARVIN, WATERTOWN, N. Y.

Whoever desires to understand why one Grape-vine does poorly and fails to mature a crop of fruit while another apparently under similar conditions bears well and does well must study this topic. The matter can only be successfully studied after a winter of bare ground, when the frost has penetrated to a considerable depth.

The explorer then going at it, pick and shovel in hand, and digging down to the bottom of the frozen soil, will find a stratified condition of the soil that will prove a wonder to him. The strata are composed of alternating layers of frozen soil and ice; the former may vary from one to several inches in thickness, the latter consisting of ice crystals from a quarter of an inch to an inch or more in thickness, or rather in length.

This curious phenomena, I think, may be accounted for in this way: during the day there is more or less thawing; during the night freezing, but no thawing. The colder then the night the deeper the frozen soil; the warmer the day the more thawing and increase of soil water to make a thicker layer of ice. The ice crystals lay side by side, and while forming push up the frozen strata of earth immediately above them with such an amount of energy that the plant roots in the unfrozen soil below them are either pulled up or broken off, if they refuse to yield to the forces above.

With the roots thus broken an inferior growth must be the result. But you may say that the roots of all the vines will be broken alike. This does not follow, for the conditions differ. The soil is more compact under one vine than another, indeed, owing to the differences of the root systems of different varieties they are unequally acted upon. One vine spreads its roots out near the surface, and perhaps all its roots are elevated in the same strata and escape being broken; another's roots penetrate deeper, but not so deep but what they pull up a little, still another vine has fewer roots that penetrate the subsoil before they branch out, and this one was ruined by its main roots getting cut off.



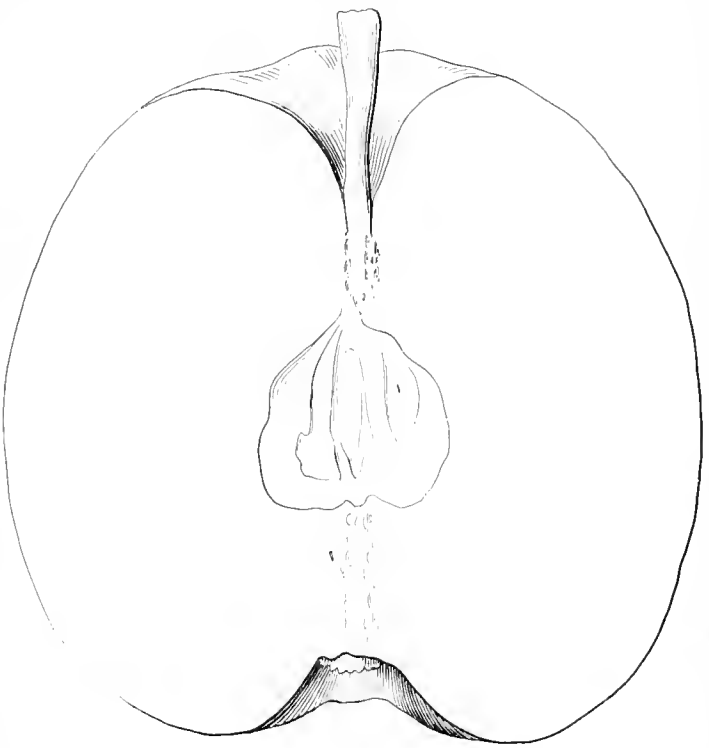
Warfield's No. 2 Strawberry.

One plat of ground is porous and open, so that the soil water sinks as fast as it thaws, the ice layers too thin to sever the roots. Another plat has an impervious subsoil two or three feet below the surface, and the water cannot sink, so there is a thicker strata of ice formed each succeeding cold night, until a non-freezing depth is attained.

The lessons to be gleaned from a study of the facts are, that more attention is needed to the root systems of the different species and their several hybrids and varieties. In my experience and upon my grounds the Delaware has proven least affected by heaving, and the Salem the most so. But undoubtedly the main remedy lies through influencing and selecting for soil conditions.

As will be observed, a porous soil is a favorable one, and a soil underlaid by hard pan an unfavorable one, but even an unpropitious soil may be turned into a favorable one by underdraining and subsoiling. A survey of the facts also explains why a hill side is good for vineyards, the water runs off and there is little heaving. In reality it is never safe to select a level, damp, retentive soil for the vine, for of all plants it is most affected by unfavorable soil conditions.

The facts here given are not taken at second hand from anybody's conjectures. I had often wondered at the weak growth of some of my vines, and suspecting the reasons I went at it last spring, pick and shovel in hand, and I found ample evidence to confirm the explanations above given. I was so much interested in the study and explanation of the facts that I have written them out for the consideration of other vineyardists.



THE IDAHO PEAR.

Candidates for Public Favor.

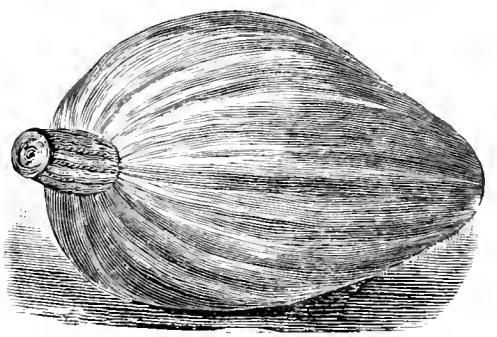
THE IDAHO PEAR. A specimen of this remarkable Pear received at this office in fair shape as late as November 14 sufficiently testifies to its keeping qualities. It was sent from the grounds of Jno. H. Evans, of Idaho. The fruit is large to very large, of the form shown in our engraving, and presents the singular character of being seedless. The flesh is tender, nearly white, vinous, with a flavor, if not so sweet as Bartlett, it is at least rich and agreeable. The history of the Pear in brief is this: About 20 years ago a Mrs. Mulky, of Idaho, saved seeds from a fine, large, red cheeked Pear, resembling the Bartlett. One seed grew. It had such fine, thrifty foliage and clean, healthy wood, that it was determined to not bud it. The next spring it was transplanted in the orchard and in 4 years from the seed bore fruit, and has continued in bearing ever since. The only objection said to be known to the tree is that it bears too heavily. It has endured 32° below zero, and is said to flourish better during the hot, dry summers of Idaho than any other variety.

Mr. Evans informs us that the average size of the Pears as they grow on the tree without thinning is from 10 to 15 ounces. He sent 4 specimens to the Burlington Co. (N. J.) Fair that weighed 19, 19¼, 21 and 23 ounces. They were tested by a special committee and took the silver medal, the highest prize of the Society. We have flattering testimonials from Pres. Berckmans, Pres. Earle, Pres. Lyons, Dr. Hoskins, Pres. Barry, Wm. Parry, Prof. Budd, and others. No effort has as yet been made to boom this Pear, as there will be no trees for sale for another year or two. The large size, peculiar shape and fine qualities seems to be making it popular at first sight.

WARFIELD'S NO. 2 STRAWBERRY. This is a pistillate variety which originated on the grounds of B. C. Warfield, Marion Co., Ill., in 1883. In its brief time it has attained a reputation so excellent throughout its own locality, and even further, that it would seem well entitled to attention from fruit growers generally. Mr. Warfield informs us that from the first seventeen plants, and which were planted out in 1883, he the next season picked one quart of fruit every second day, they occupying a space 2 feet wide by 2½ feet long. The plant is a pistillate of vigorous growth, with penetrating roots to resist drought. Its time of blossoms, as well as of fruit, is with Crescent. Plants set in June had on a single stool the following season 195 blossoms and berries. It is said to equal Wilson as a shipper, having a tough skin, and is superior to that variety in other respects, and superior to Crescent in every quality. It is stated that berries were sold in Chicago, May 31st, for from $3.50 to $3.75 per case after being held until the second day after arrival.

THE SIBLEY SQUASH. This new variety is offered by Hiram Sibley & Co. as a grand surprise to those persons who hitherto have held the belief that to eclipse the Hubbard was an impossibility.

The form is shown in the annexed engraving and is remarkable in having the stem at the swelled end. The shell is described as being of a pale green color, very hard, thin and smooth. The flesh is said to be solid, of a vivid, orange color, dry, and really wonderful for fineness of grain and the rich and delicate flavor peculiarly its own. The weight ranges from eight to eleven pounds, though the eight-pound specimens are comparatively few in number. The vine ripens its fruit simultaneously with the Hubbard,



THE SIBLEY SQUASH.

and so evenly that nearly the whole crop may be gathered at one picking. The quality is considerably improved by being housed a few weeks. As a keeper it is said to excel all others; remaining, in a good, dry cellar, sound until March—constantly improving in flavor and quality to the very last.

Mulching Strawberries with Leaves.

E. H. CUSHMAN, EUCLID, OHIO.

I have tried many kinds of mulch for the Strawberry, and find Maple leaves one of the best. For years I have put on the leaves of the same year's growth, and unless brush, boards or some other coarse material was placed on them they blew off. This is the common drawback to their use.

To obviate the difficulty referred to I have the leaves raked up in piles in the woods during open weather in the winter, and allow them to stand through the following summer to partially decay. In this condition they make a perfect mulch applied in the fall. They stay where placed. There are no weed seeds to grow or come up through the following summer. The ground is kept moist beneath the mulch, and by the time the fruit is gathered the leaves are pretty well broken up and the earth between the rows can be stirred without much difficulty.

In this way a Maple orchard can be made a valuable adjunct to Strawberry culture.

I strongly suspect there is a mistake about the best time to mulch. I have until last year followed the oft repeated direction, "Put on after the first hard freeze." Last season as early as the first of October the mulch was put on between thickly matted rows, and even to pretty well lap over the plants, and they did well.

This year have put it on hill rows the last of October, with just a little breathing place for each plant. Plants not covered are all brown, while those mulched have green leaves. The earth seems to be much more mellow where they are covered early.

Preparing for and Setting out Strawberry Plants.

M. L. THOMPSON, EAST ROCKPORT, OHIO.

First let me say that if your land happens to be heavy clay and not underdrained, tile drain it and see that it is as free from grass, clover, sorrel and other weeds liable to take possession as possible. If you are in no special hurry the best way is to prepare the land the previous year by planting Potatoes or some other hoed crop to free it from weeds and grass. Then in the fall plow deep if the soil is deep, if not plow accordingly. While I advocate deep plowing where your land will stand it I don't advocate plowing up the poor bottom soil; I recommend subsoiling heavy clay ground for this reason: it makes the bottom soil more porous, the plants taking better root, and are able to better stand the winter, as well as drought in summer.

Some say any good soil in northern Ohio will do for Strawberries. In this I differ; I recall a piece of land that was always considered as good a piece of land as was found in our neighborhood and unequaled for Potatoes. But this same land would not grow a quarter of a crop of Strawberries and the only reason I can give for it is that it lacked just what the Strawberry needed. It was considered to be as a result of steady manuring in first class condition for any crop. I find that land for Strawberries will stand to be well manured with good rotten manure and unleached wood ashes, I have as yet never found their equal on my land. They not only increase the yield but they seem to have a brighter color. The Wilson, for instance, is rather dark in color, but on land where I have used wood ashes and lime (from the lime kiln) and secured good foliage my berries are much brighter, and in our market will sell from 50 to 75 cents more per bushel. The quality may be no better, but their appearance is.

Now with the land plowed in the fall, haul on say about 20 loads of good rotten manure to the acre. I mean by well rotten manure, manure that has been turned over two or three times and heated so that all grass seeds and weeds have been destroyed by the heating. As you haul it out don't throw it in heaps but scatter it over the top evenly. I don't believe either in plowing under manure or putting it on fresh full of weed seeds.

The spring at hand and your land dry enough, drag it thoroughly, and if necessary cultivate so as to work in the manure as near the top of the ground as possible so that it is just covered with fine dirt. The rain will be sure to wash the strength of the manure down to the roots.

As regards planting, I could never adopt a regular plan, for my soil varies and the seasons vary. Sometimes I mark out the land and plant with a spade, having one man make the holes and a boy or woman put in the plants, a very good plan on some of my soil. If my land is fine and mellow I take a marker made of a piece of pine 6x8, and holes made for its teeth every foot apart with a 1¼ inch auger. The teeth 15 inches long with the end to go in the ground, sharpened to about 1 inch through and about 3 inches wide. This throws out a nice mark about three inches deep; the teeth are movable so I can make the rows 2, 3, 4 or 5 feet apart. Following this my hands can plant very fast; they generally get on their knees and then it is not such a backaching job as planting with a spade. I have thills and two handles to the marker. I prefer this plan to the spade, as being less apt to get the plants deep with the crown covered, a common trouble, resulting in loss of plants.

Another thing, be sure to keep your plants from the sun and wind. I generally use a half bushel basket for planting because it is light. When the weather is dry I keep plenty of water near the plants to always keep them wet, and not take too many in the baskets at a time. I keep the plants in a flour barrel, as it don't let in the wind, for if the wind strike the fine roots they are soon gone. No doubt hundreds of dollars are lost by not taking proper care of plants after they are dug. Be careful not to mark out too many rows at a time, as the fine ground will soon get too dry, and if rain does not come right off you may lose lots of plants.

My idea is that planting Strawberries is often deferred until it is too late; they should be planted as early in the spring as the ground can be worked. In the North from April 10th to 20th is a good time; the ground is generally moist and there is not so much danger of dry weather. Better get all the help you need early and done with it; that is my experience. I prefer four hands for one week early to two hands for a period of two weeks.

One year when I planted a piece late the weather came off hot and dry and I had a ditch with plenty of water close beside the piece. I wanted to plant, for I had bought the plants and they came, so nothing would do but they must be planted, and the ground had all been plowed in the spring and was exceedingly dry and fine. I run a risk on losing all the plants if I waited for rain, so I marked out four feet apart and commenced to plant. I got some pails and two water cans, took off the nose and had the women turn about a teacupful of water right in the mark that I had made about 15 inches apart. I never saw a better catch. Early in the next morning I went to the patch and scarcely a plant was wilted. I never lost less plants nor had plants do better than these. In three or four days rain came and they started. Neighbors said the watering would form a crust and they would all die, but not so. The women just grabbed a handful of wet ground in their right hand and put the plant in the hole with their left and then threw the mud on the roots and covered it over well with dry dust, which kept it from baking. I had plenty of water close by or I could not have done so well. I tried the same thing this year with success.

I think I can plant Strawberry plants in the dryest of weather this way, and they will stand a week without rain and lose but very few plants. I only speak of it in case anyone gets caught as I did.

Comparative Practical Test of Fertilizers.

Below is a report of the experiment field planted by Stow (Mass.) Grange the past season. The fertilizers employed were generously contributed. The grange had a field meeting at the time of planting and tried the different kinds of implements; also a field day of hoeing and harvesting. The crop was sold, which will make a neat little sum for the treasury.

No. of Row.	FERTILIZER.	POTATOES. Pounds Fertilizer used.	No. Pounds.	Pounds No. 1.	Pounds Small.	Pounds rotten.	CORN. Pounds Fertilizer used.	Pounds Corn.	Price per ton.
1	Buffalo	30	170	110	41	19	15	64	$38.00
2	Bradley's	30	209	136	59	14	15	49	38.00
3	Darling's	30	169	109	33	27	15	30	38.00
4	Dole's	30	191	124	47	20	15	59	——
5	Economic	30	65	37	24	4	15	32	25.00
6	Mapes' Potato	30	228	161	54	10	15	76	50.00
7	Clark's Bay State	30	161	93	48	20	15	47	36.00
8	Cumberland	30	177	119	49	9	15	42	40.00
9	Dow's	30	153	78	63	12	15	42	35.00
10	Stockbridge	30	183	130	46	8	15	47	45.00
11	Americus	30	164	90	56	18	15	55	38.00
12	Jefferd's	30	163	105	47	11	15	40	38.00
13	Bowker's Hill and Drill	30	176	122	43	11	15	37	38.00
14	Church's Fertilizer	30	48	29	10	9	—	—	21.38*
15	Church's Fish and Potash	30	92	54	14	24	—	—	34.20*
16	Church's Standard	30	106	62	14	30	—	—	31.35*
17	Manure spread	$1.00	227	90	109	28	50c	68	——
18	Manure in drill	1.00	164	73	20	71	50c	83	——
19	No Fertilizer	——	70	23	36	11	—	—	——

* Planted two weeks later than the others.

PROLONGING THE STRAWBERRY SEASON. In the first place, varieties ripening earliest and latest, must be planted. The earliest I have found of any value is the Crescent; so I plant Crescent and Wilson for early. Downing is my best medium. Mt. Vernon, Manchester, Kentucky and Glendale are all good late varieties. The two former are my choice. The plants should have thorough cultivation, so as to go into winter perfectly clean from weeds and grass, making spring working unnecessary; but if spring cultivation is necessary it should be done as early as possible, which is no detriment. They should be mulched as soon as the ground is frozen, not before. The early varieties may be mulched lightly on the rows, and raked off between the rows early, that they may start with the first growth of vegetation. The late varieties should be mulched heavily between the rows, and lightly on the plants, letting it remain on in this form; but care should be taken that it is left but very light on the rows. This is the important point of the whole matter. I have had great damage done to plants in leaving the mulch too heavy directly on the plants to late to hold them back. If the season is just right they may recover, but if it comes dry and hot after removing the mulch the plants are sure to suffer. The very light mulch on the row, just enough to shade the ground, and the heavy mulch between the rows, will accomplish the same desired effect, to retard the plants, and without any fear of damage.—Michigan Report.

A Mexican Offering to the Flower Garden:—Tridax Bicolor.

We reproduce from the London Gardeners' Chronicle an engraving of the Mexican annual, Tridax bicolor, now attracting the attention of the florists of Europe. Although known to botanists for many years, it is a novelty in the flower garden. It inhabits the stony hills near Chihuahua, is of annual duration and dwarf habit, with yellow and red or pink flower-heads; but the rays of color appear to vary from pink to purple.

Seeds of Tridax bicolor were collected in 1885 by English explorers, and some of this passed into the hands of Mr. W. Thompson, the well known florist and author, of Ipswich, England. Mr. Thompson furnishes the following information concerning its character and cultivation:

The plant has been treated as a half-hardy plant, but will probably succeed with the treatment afforded hardy annuals if not sown too early. It forms a much branched tuft, from 12 to 15 inches in height and as much in breadth, each stem and branchlet being terminated by a flower-head from 1½ to nearly 2 inches across, with a yellow disc, and a ray of from fifteen to eighteen rather broad three-toothed florets of a pleasing rose color. The involucral scales and flowerheads in a partially developed stage are of a deep crimson hue. The foliage is somewhat triangular in form at the base of the plant, where the leaves are about 2 inches in length and half as much in breadth; they are strongly nerved, and have their margins widely toothed; the upper leaves become gradually narrower and smaller, and are mostly quite entire.

The plant would seem to have a robust constitution, and blooms profusely from July until quite the close of summer. The specimens sent are taken from plants partially exhausted by seeding, but still covered with undeveloped buds, which will prolong its season until winter arrives.

The typical plant, as described by Dr. Asa Gray in *Plantæ Fendlerianæ*, has white rays, but the present variety is referred to by the venerable botanist. The genus is closely allied to the older Galinsoga, of which G. trilobata, was formerly cultivated.

We are not aware that Tridax bicolor has yet found a place in the seed catalogues.

Begonias—Their Classes and Their Culture.

W. FALCONER, GLEN COVE, N. Y.

These plants naturally abound in Central America, Southern Asia and South Africa, and although many species extend up the mountains to the regions of light frosts and snows, no known species is hardy in our Northern States. We sometimes read about the hardiness of some of the tuberous-rooted sorts, but my experience with them and others is that we have no hardy Begonia of any kind.

Some Begonias are of gigantic proportions, others diminutive; some are very ornamental, others (and there are lots of them in cultivation) poor enough. Florists cultivate a limited number of standard sorts, but in private greenhouses we often find Begonias not grown by florists. As a rule, however, the florists keep the most desirable kinds.

WINTER FLOWERING BEGONIAS.—Among the best of these are the upright bushy sorts we grow in such quantity for winter flowers. Begonia insignis, pink, November and December, is the best; then comes B. Saundersoni, with its red waxy flower buds all the year round, but mostly in winter; B. fuchsioides, scarlet, winter and spring; B. erecta multiflora, pink, December to February; B. odorata, white, December to April; B. coccinea (rubra), scarlet, showy, very vigorous, and in bloom constantly all the year round. Begonia manicata, whitish pink, December through January; B. Weltoniensis, pale rose, neat, and according to conditions of cultivation can be had in bloom any time of the year.

While these "flowering" Begonias are generous bloomers, we use them very little among cut flowers. Large bunches of themselves are pretty, but they drop very readily. For home use they are all right,

TRIDAX BICOLOR FROM MEXICO, CONSIDERABLY REDUCED; FLOWERS ROSY LILAC.

but for shipping, unsatisfactory. But as decorative plants for the window or conservatory they are capital. I grow the preceding kinds in quantity in greenhouses where they are much shaded by large plants and vines. No, these are not the best conditions for them; they prefer an open, light place, but most all other "flowering" plants do the same, and I find that Begonias submit to shady treatment better than would the other plants, hence I impose on their good nature.

TUBEROUS-ROOTED BEGONIAS.—These are the most desirable race for summer blooming. They afford us all shades of white, yellow, pink and scarlet, and we have many double varieties. They are capital plants for amateurs who have only a window and small garden patch; they may plant them out in summer, lift them in fall and store the tubers in sand or earth in a box or pot, and lay it past in the cellar or cupboard till next May, when again the tubers may be planted in the garden.

They are easily raised from seed, but as the seeds are fine as dust, and there is only a tiny pinch in each packet, we need to deal very carefully with them. While all the seedlings may grow well and bloom freely, only a very few will be first-class varieties; but the best way to do is to keep on sowing a packet or two of seed every year, selecting or retaining the best varieties, and discarding the poorest. Then again save seeds and grow the seedlings from your own choicest plants, and in this way, after two or three years you may succeed in getting up a very good lot of Begonias. And you can also increase your stock from cuttings. They bloom from seed the first year. Some folks plant them out in open, sunny places with more or less success, but I have always found them to do better in a somewhat shaded place, but not under the drip from large trees, and nowhere better than in a border along the north side of a building.

We have also many fine named varieties, and if you know what you are getting it may be better to get a few of these extra choice sorts and increase your stock directly from them. Laing's Jubilee Collection is, I believe, the finest dozen double varieties extant. They are: Alba fimbriata, fringed, white: Alba Magna, white; Marchioness of Stafford and Lady Lennox, yellow; Alba rosea, rose with white center: Amy Adcock, darker rose with white center, and Lillie with less white in the middle; Lord Randolph and Lord Loughborough, both scarlet; Little Beauty, rosy red; Jubilee, magenta red; and Marquis of Stafford, dark red.

Begonia Froeblii is a splendid winter-blooming scarlet-flowered, large-leaved tuberous species, introduced some 16 years ago, and then in great repute, but recently less grown. Mr. Taplin when at South Amboy 12 years ago grew it magnificently.

REX BEGONIAS. Begonia Rex is a native of Assam, and not only one of the finest of its race, but one of the parents of most of the showy sorts that so much resemble it in form and color. In this class we include Marshallii, Griffithii, Queen Victoria, Duchesse de Brabant, Comte de Lemminghe, Jules Chretien, Nivosa and Splendida argentea. So much have these and other forms been crossed, that from seed we get these and many other varieties. We use them in pots at all seasons for house decoration. In summer planted out in sheltered, shady places, they thrive well and color better than they do indoors. In boxes in shady places outside in summer they also are very appropriate. In greenhouses they often are used in company with ferns and moss to clothe the back walls inside warm ferneries. Small plants are also used for mixing among other kinds of plants in fern-cases in the house in winter. While the beautiful foliage is their main attraction, their waxy or silvery white flowers are quite pretty and fragrant.

LARGE-LEAVED BEGONIAS.—We have many of these, but only a few in general cultivation. I find B. ricinifolia and B. heracleifolia the most useful. As greenhouse plants they take up too much room, but by wintering over a few young plants and planting these out-of-doors in summer in a sheltered, moderately moist and shady place, they grow immensely and flower freely too.

BEGONIA SEMPERFLORENS is an old white-flowered species, till recently almost forgotten in gardens, but now being resurrected and "boomed." We have several varieties of it, some with rose colored flowers and others of more vigorous habit than the original species. All are of the easiest cultivation, perpetual blooming, available for outdoor or indoor use, free-growing and free-blooming, and self-sown seedlings scatter themselves hither and thither everywhere about the old plants. But there is something weedy about it.

BEGONIA SCHMIDTII was thrown upon us with great hurrah as a bedding plant some years ago, but my experience with it has been unfavorable. It blooms abundantly, sure enough, but its flowers are miserable little things.

AND BEGONIA METALLICA is another plant that I think has been over-lauded. Yes, it grows well and is densely furnished with metallic-like foliage, still I don't see enough in it to get into ecstacies over.

PROPAGATING.—All Begonias may be increased from seeds, and in the case of tree

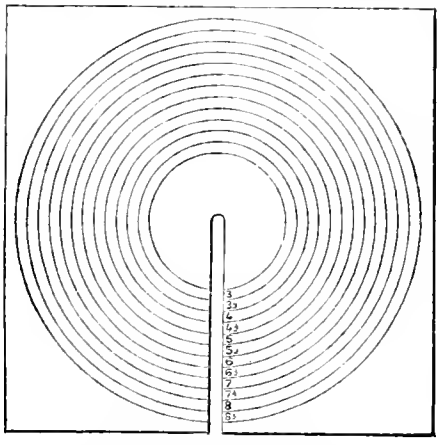
species the seedlings are generally the exact counterpart of their parents, but in the case of garden varieties and hybrids the seedlings will be apt to differ more or less from the parent. The seeds are fine as dust. Sow in pots, pans or shallow boxes, that are well drained and filled with light, sandy soil; merely dust the seeds on the surface of the soil, then water by dipping the base of the pot in water till you notice the moisture rising to the surface. Then place the flat in a warm, sunless window, or part of the greenhouse till the seedlings appear, when prick them off in little bunches into other similarly prepared pots or pans. Don't water young seedlings overhead, but always by dipping, and never dip unless the soil is pretty dry.

All Begonias may also be increased from leaves, but it is only in the case of Rex hydrocotyfolia and similar kinds that leaf propagation is practiced. Big-leaved kinds, as Heracleifolia, had better be raised from seed or division, and all bushy sorts, as Insignis, from cuttings. I prefer to propagate in early spring.

Soil in Pots.—Turfy, fibrous loam, with some sharp sand. Except in the case of fast growing young stock, I don't care about using leaf mold; and only in the case of vigorous sorts do I use manure in the soil. We read a good deal about using peat; my advice is don't. If I had good fibrous peat I'd use it, but the kind of peat I get here turns to pasty manure so soon that it is more hurtful than beneficial to pot plants.

Watering. — Evergreen Begonias, as Coccinea and Nitida, should be kept moderately moist at all times, but tuberous rooted Begonias, as Davisi and Boliviensis, should have a decided period of rest, when they should not be watered at all. All kinds when in active growth should be watered freely. While Begonias like a moist atmosphere, they are impatient of having their leaves wetted much. Except now and again in bright weather, and to wash the dirt off them, there isn't much gained by syringing, hosing or sprinkling them overhead.

Resting.—By reducing the supply of water and lowering the temperature, I rest my Rex Begonias. The same with the other large leaved sorts I plant out in summer, but in case of the bushy "flowering" sorts, as Fuchsioides and Insignis, I give



DEVICE FOR MEASURING BLOOMS.

them no rest. When they have done blooming, or become homely in any way, I secure and strike some cuttings and throw the old plants away. Tuberous rooted Begonias need a long and decided resting period, and be this summer, as in the case of Froebii, or winter, as in the case of Veitchii, let them have it. But never let frost reach the tubers. And don't keep them unduly dry.

Temperature.—There is nothing gained by growing Begonias of any sort in a temperature of less than 50°. Over 65° by artificial means, too, is useless unless it be to hurry up Rex or young stock.

Summering.—All Begonias, so far as my experience extends, prefer outdoor to indoor quarters in summer. And, providing the place is to their liking, grow more luxuriantly when planted out than when kept in pots. My winter flowering stock, as Saundersoni and Ingrami, I plant out in May and lift and repot in September with the same regularity as I do with Ivy, Carnations or Bouvardias.

Insects.—Green-fly will attack the flowers and tender young shoots; Thrips the back of the leaves of any of the sorts. Red Spider appears occasionally, but the worst pest is Mealy Bugs. Dipping in warm tobacco water will displace the Green-fly and Thrips, but the Red Spider and bugs had better be rubbed or washed off.

Device for Measuring Blooms.

I have thought it may interest some of your readers if I were to describe a simple inexpensive contrivance we have in use here for measuring Chrysanthemum blooms and other products having a stem. It consists of a thin deal board a foot square, on which is marked consecutive rings a quarter of an inch apart, all being drawn from the same point—the centre of the board. A slot wide enough to take the flower stems is made to the centre, and on the outside of each circle is marked its diameter, which multiplied by 3 gives its circumference. A flower any size can thus be measured much more correctly and quickly than by any other method that I am acquainted with. I send with this a rough sketch of our board, which you may reproduce in a reduced form in your pages if you choose. Our board is 9 inches in diameter.—Corr. Journal of Horticulture.

Some Points on Flower Gardening.

L. F. ABBOTT, ANDROSCOGGIN CO., MAINE.

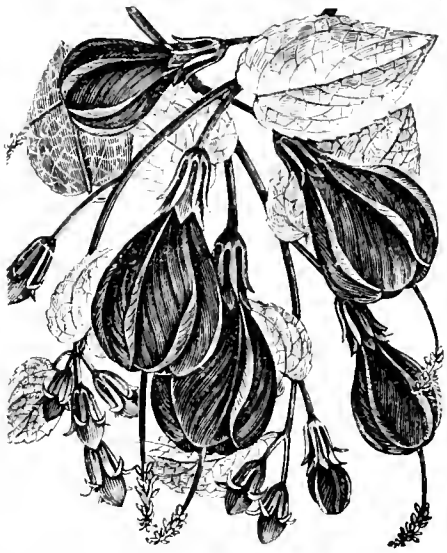
Generally speaking it should not be attempted on too large a scale. It is much better to restrict one's operations to smaller limits and expense, the care and cultivation upon less varieties and a smaller area, growing to perfection what plants are selected. The ground should be properly prepared by fine, deep tilth and well enriched by old decomposed manure. A rich compost of turf, leaf mold and bone dressing, so handled as to be perfectly fine and free from lumps, makes a nice dressing for flowers.

In exposed situations the ornamental as well as the vegetable garden should be protected on the north and west sides by close fences or by a plantation of shurbs. A thick growing hedge of some one of the many plants suited to that purpose may be made both ornamental and of utility. In small gardens, where there is not space for picturesque delineation, a general air of simplicity and neatness should be the prevailing characteristic. A variety of forms of beds may be employed, provided the figures are graceful and not complicated. An oval is a form that generally pleases, on account of the continuity of its outlines. A circle, if quite extensive, may be indulged, but the fanciful shapes of hearts, zig-zags which represent nothing, and usually diamonds or triangles, seldom form a pleasing effect. A simple parallelogram divided into beds running lengthwise, or the segment of an oval with beds running paralled to its outer margin, will always please.

The outfit to make a very pretty garden need not be costly. It is necessary to have a few implements, such as a spade, a couple of rakes—a coarse wooden one and a finer iron toothed one—hoe, trowel, line to draw curves with, and pruning knife and shears. The florists', seedsmen's and nurserymen catalogues should be consulted,—and by the way such will now soon make their appearance in all their loveliness—and seeds of such annuals selected as will give a succession of bloom and variety.

The Tree-like Malvaviscus.

Of the numerous plants received at the office of Popular Gardening every year for name no other one arrives so often as the Tree-like Malvaviscus (*M. arborea*),



THE TREE-LIKE MALVAVISCUS, FLOWERS SCARLET

shown in our engraving. The enquirers frequently ask, Is it an Abutilon or Flowering Maple? because of its near resemblance to that flower. It is indeed a very near relation, both belonging to the natural order *Malvaceæ*, but distinguished by botanists as two genera. Formerly the subject of our sketch was known (and is still in some catalogues and books) as *Achania Malaviscus*, but now the genus bears the latter name.

The chief attraction of the species illustrated is its handsome scarlet flowers produced at the axis of growth, and its green, heart-shaped, sharply pointed leaves. The plants are mainly grown in the greenhouse and window and thrive under quite ordinary treatment. The species prefer a compost of rather rich fibrous loam in which to grow. The plants are propagated by cuttings.

This Malvaviscus is one of the oldest American plants known to modern florists, having been introduced to Europe from the West Indies as early as 1714. Belonging to the same genus are half a dozen other species suitable for greenhouse culture, all of which are natives of tropical America and Mexico. One species known as *M. mollis* from Mexico, resembles the present variety in a number of respects, but is specially distinguished by its three-lobed, soft leaves.

495. **Transplanting Young Walnuts.** Any time before May. Cut back tap-root, that's all.

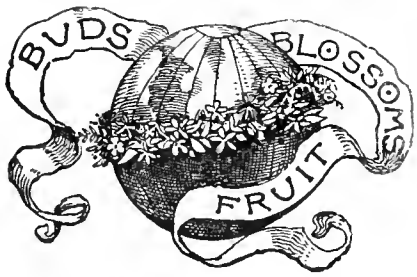
476. **Lapageria rosea from Cuttings.** Hope for success but be prepared for failure. Select stout well-ripened shoots. Make the cuttings two eyes, in October to December, and insert them in pots or small pans in sandy soil. Keep in a cool, shady part of the greenhouse. They will not likely begin to root till the following summer. Lapagerias are usually propagated from layers. Sometimes a shoot is brought down, partly cut at a joint and elbowed into the soil as we would a Japanese Maple, and in which case we get our plant. But the common way practiced by nurserymen is to select stout, healthy shoots and tack them flat, either spread out or coiled, on a bed of peaty earth, then cover them over about ½ inch deep with clean sand or sandy peat, taking care to preserve all the leaves and keep them sticking up through the sand, also the ends of the shoots sticking up. After several months some of the eyes will push forth shoots and the joints take root, then these can be separated and treated as single plants. But propagating Lapagerias by seeds, cuttings or layers is no easy task.—W. F.

Who is Unfaithful?

If man could rule, his love of change would mar
The purple dignity that wraps the hills;
Train the gnarled Apple-tree more straightly up;
Lift Violet's head, so long and meekly bowed;
With some new odor fill her purple cup,
And gild the rosy fringes of a cloud.
We are unfaithful. Only God is true
To hold secure the landmarks of the past;
To paint year after year the Hare-bell blue
And in the same sweet mold its shape to cast.
O, steadfast Nature, let us learn of thee!
Thou canst create a new flower at thy will,
And yet, through all the years canst faithful be
To the sweet pattern of a Daffodil.
—*The Cosmopolitan.*

There is no unbelief.
Whoever plants a seed beneath the sod
And waits to see it push away the clod,
He trusts in God.
Whoever sees 'neath winter's field of snow
The silent harvest of the future grow,
God's power must know.

The clouds may hang too low, too low,
The ice-bound streams refuse to sing;
The cold, bleak blasts may bitter blow,
And Nature's pulse refuse to flow—
But, true as Truth, at last comes Spring!
—*Wakeman.*



Again increased in size.

Trees are God's architecture.

Verbenas are poor house plants.

Tomato shoots will graft on those of the Potato.

Linnæus believed the Nasturtium to be electric.

Let us see Sweet William more to the front again.

The "extraordinary" in new plants is too often a fraud.

For a midsummer blooming tree choose Koelreuteria.

If you don't see the information you want ask for it.

Five subscribers sent in secures your own paper free.

Cabbages if not in contact with soil need some ventilation.

If only the large red Pæony were a new flower, what a sensation it would create.

Vegetables stored in large unbroken bulks are liable to ferment to their injury.

The great advantage of small fruits; plant this year and you have a crop next year.

Gladioluses have been bloomed in the house in winter by planting the bulbs in July.

Appropriate. In several instance of late young ladies have acted as judges at flower shows.

Don't allow 1888 to pass around without adding numerous choice shrubs and vines to the home embellishments.

Hyacinth bulbs started in moist sand may be transferred to and do well in hanging baskets of moss in the window.

The Popular Gardening tree should make its best growth just at this season. Will you do what you can to stimulate it?

The Hardiest Rhododendron, according to the authority of S. B. Parsons, is R. grandiflorum, next is Speciosum undoubtedly.

A Floral Salt. A remarkable property of the Ice Plant is its absorption of salt, its leaves having been found to contain 33 per cent of salt.

Nature's Combinations. A writer grows very enthusiastic over the charming combination of a Virginian Creeper in its crimson autumn effects as it runs over a Red Cedar evergreen.

Covering with Tarf. A Canadian reader covers his Raspberry plants with sods placed over their tips, and this reminds us that the same cover is unequaled for many low bushes and plants.

A good New Year's resolve for every subscriber: To send at least one item of horticultural interest, one new subscriber, and your own renewal to this paper at some time during 1888.

Paper for Protection. In extremely cold nights a cover of newspapers over the plants, whether in the dwelling, the forcing pit or the greenhouse, may be worth its weight in gold.

It's no wonder that boys don't want to stick to fruitless and flowerless farms. Get them interested in gardening and fruit growing for profit and pastime and there'll be far less trouble here.

Because an agent carries bottled fruit specimens it does not follow that the trees he would send will bear of the same. If you buy of agents be sure the agent is right before you go ahead.

American Hyacinths. An exchange reports that a florist in Washington Territory proved that Hyacinths can be grown there, producing in two years better bulbs than can be grown in Holland with longer cultivation.

The Chinese Quince is gaining in the Southern States. A Florida correspondent says of it that while its quality is not equal to other Quinces, in productiveness for the Southern climate it excels all others, perhaps as ten to one.

We are counting on every reader to help enlarge our subscription list by sending in one or more new subscribers. No better month for the work than the present one. Lots of room in this broad country for such missionary work.

Device for Sowing Seeds. Take a bottle and cut say three grooves of different sizes in the side of the cork, and have a plug to each groove. In sowing use a groove adapted to the size of the seed, (in the bottle) having the others closed.

A "Rare" Tree is what the Weeping Beech is called in a nurseryman's catalogue. If rare it is not because it is new, for it is at least upwards of 75 years old. By far too many other choice old ornamental trees and shrubs might similarly be spoken of as being rare—too rare.

European Sparrows. Like persons who are bold, forward, and self-assertive in their manners, these birds are cowards. Bang away at them with a shot gun a score or less of times and you can frighten them from your place. But your neighbors may not thank you.—*Big Boy.*

Flower Farming. A French flower farm of about seventeen acres was planted with 45,000 tufts of Violets and 140,000 roots of the white Jasmine, with Roses, Pelargoniums, Tuberoses, and Jonquils. A laboratory was erected for the manufacture of perfumes, and in the fourth year after planting lucrative results were had.

Pot With Perforated Rim. Instead of using a training wire, as described on page 52, for tying the branches of pot plants too, I have for years had my potter perforate some pots in their rims before the baking process, and in these holes I have attached the strings for tying out the plants. I send a sketch of such a pot.—*Chas. Parker, Allegheny Co., Pa.*

Deceptive Measurement. Matthew Crawford, the successful Strawberry raiser, has somewhere said that the Sharpless has been grown to fourteen inches in circumfereuce—this measurement being obtained by going over every projection of the irregular berry and down into every hollow. If regular in form one of such measurement would weigh eight ounces, but none actually went above two ounces.

South American Orchid Trade. The United States consul at Venezuela says the collection of Orchids and other plants is beginning to be a business in that section, and that in the last six months a declared value of $8,659 was shipped to the United States, in addition to various lots sent to England. As yet it is impossible to say how far this industry may be extended, as the flora of the forests has never been fully investigated.

Liquid Manures for Bulbs. *No.* 1.—I have found a good and safe fertilizer for these to consist of a quarter of a pound of cow manure mixed in a large garden can of water, applying it twice a week. *No.* 2.—A large handful of soot, or about a pint, tied up in a piece of old canvas and immersed in the same quantity of water for a day or two, furnishes a safe and excellent stimulant. *No.* 3.—An ounce of nitrate of soda dissolved in four gallons of water is said to be a quick and good stimulant for bulbs, to be applied twice a week after the pots are filled with roots and flower-spikes are visible.—*S. W.*

Professor Goodall on Watering. The supply of water to plants through their roots is always more abundant when the soil is in a warm state; hence when plants begin to wilt, mere warming the earth around the roots will sometimes cause them to revive. But it must be remembered that roots (except those of aquatics) need air to breathe, and hence they must not be drowned. Sometimes the pressure of the juices within the plant is so great that water is forced out through minute rifts. This is often seen in the case of the young leaves of wheat and corn, the drops of water at the tips looking like dew, but plainly coming from within the plant.

The Gano Apple. Specimens of this new Western Apple have been received at this office. They came from the Star Nurseries, Lee Summit, Missouri. They are remarkably attractive in size and appearance being large, of fine form and highly colored. As for eating qualities this variety possesses a very pleasant flavor, standing in this respect among the best of Apples. It is claimed that it will keep until February and March. We are not certain as to this, for one of our specimens showed rot by the middle of December and the others hardly promise to keep six weeks longer. Should the tree prove to be as hardy and productive as is claimed, this variety must rank highly among market fruits.

Some of the Newer Shrubs Josiah Hoopes of West Chester, Pa., mentions the following among the most satisfactory of the newer shrubs, although not strictly novelties: Exochorda grandiflora, Viburnum plicatum, Weigela candida, Spiræa callosa, Spiræa crispifolia, Rhodotypus kemoides, and the dwarf Japan Maples. The Exochorda, from the north of China, produces large white flowers in May, but is difficult to propagate; Viburnum plicatum is one of the finest of the genus; Weigela candida is a fine, erect grower, becoming a large shrub, and it produces a profusion of white flowers early in summer; Spiræa crispifolia is a very small, short shrub, about a foot high, with pink flowers, through summer; Rhodotypus has single white flowers late in spring and handsome foliage.

A Handsome Hardy Chinese Shrub. Reference is had to the Exochorda grandiflora, a near relation of the Spiræas, and about which Mr. Mansfield Milton, of Youngstown, Ohio, sends the following to our columns: From Japan and Northern China comes this most beautiful of shrubs. It is perfectly hardy, neat and compact in habit, and if more plentiful would make an excellent hedge plant, as it bears cutting or shearing back well and could be kept in any shape desired. The flowers are produced in racemes, the petals pure white, narrow at the base, showing the color as a pure tuft in the centre of the flower, giving it a peculiarly striking appearance. The foliage being of a soft green color, contrasts finely with the white racemes of flowers. As to soil it is not very particular, succeeding in any kind and also in any situation.

Sparaxis and Other Cape Bulbs. On the culture of Sparaxis, of which an engraving is presented this month, and of other charming bulbous flowers from the Cape of Good Hope, our pleasant correspondent, William Falconer, gives the following points: "All of this class, including Sparaxis, Ixias, Freesias, Alliums and Ornithogalums should be potted in fall, kept cool till they begin to grow and root well, but never allowed to freeze. Freesias for Christmas should be potted in August; for later, in September and October. Freesias are very satisfactory things and multiply exceedingly. Refracta alba is the best. Ixias and Sparaxis are very pretty the first season; after that they are apt to dwindle.

Pot with Perforated Rim for tying to.

Very few Alliums are worth growing as pot plants. Of Ornithogalums, O. lacteum and O. Arabicum are the best and these are quite showy, and if generously treated do well for years."

A Roof Garden. Many years ago my mother heard a simple minded woman say "that she could get ground enough for a garden if she only had a place to put it!" A recent call to see a neighbor reminded me of the remark. From her green-room, which was back of the parlors, one could step out on the roof of a one-story building; and this roof in the summer time she had transformed into a fine flower garden. There were a number of large octagonal wooden tubs that measured four or more feet across; these were painted red and were placed far enough apart so that there was plenty of room to walk around; and they were filled with rich soil, and planted with many beautiful plants and vines. The garden was easily watered, when necessary, by a hose attached to the hydrant. There was an outside stairs leading down into the small yard below. Around the edge of the roof was an iron

railing, made very ornamental by training vines on it. It was a charming place and it showed what a little ingenuity could do, almost work a miracle, and contribute much pleasure.—*E. W. L.*

Moon Flower vs. Bona Nox. Our experience with these flowers does not agree altogether with your correspondent who claims that the Bona Nox, or Evening Glory, does not bloom soon

SPARAXIS FLOWERS IN VARIETY.

enough for the Northern States, while the Moon Flower does. Last spring I obtained seeds of the Moon Flower of W. Atlee Burpee, of Philadelphia, and sowed them about the same time as seeds of the Bona Nox, the latter grown here in town. I put my plants on east, south and west sides of my house. The other parties had either seeds from the same lot or plants. The Bona Nox bloomed the 10th of August. Our conclusions for this section is that while the Bona Nox does pretty well, the Moon Flower is too late for us,—unless started very early inside—save as a fine vine for shade. Then again the flowers of the Bona Nox are far finer, being four or more inches across, than those of the Moon Flower, the Moon Flower being much smaller. It was not a lack of thriftiness, for my Moon Flower had run up under the eaves of the second story before it ever bloomed.—*H. A. Green, Charleston Co., S. C.*

Winter St. Lawrence Apple. Concerning this fruit, of which an outline engraving and description was given last month, Mr. Charles Gibbs, of Abbottsford, Quebec, the specialist in Russian and other foreign fruits, writes as follows: "It was imported from Manchester, England, in 1833, under wrong name of Mank's Codlin, and as its true name could not be found, the name of Winter St. Lawrence was accepted by the Montreal Horticultural Society in 1879. The fruit is medium to large, roundish, oblong, sometimes brilliantly striped on whitish ground, and strikingly beautiful. Quality might be ranked, I should think, as very good. I have not tasted it for a year or two, not having fruited it myself. It bears regularly; heavier alternate years. It seems somewhat variable as to the time it keeps. Some say not as long as Fameuse; others say longer. The tree in the nursery, my neighbor John M. Fisk tells me, is rather hardier than Fameuse. While this variety has many excellent qualities, we do not yet find it planted in orchards in large quantities, nor has it so far come into our lists of best varieties for profit.

More about certain Water Plants. In addition to what T. T. Lyon has said in your November number about the two species of Nelumbiums growing in the United States, I wish to add that he is mistaken in supposing latitude 40 degrees as the southern limit of N. luteum. I have seen many acres of it in the ponds of Kansas, Missouri and Indian Territory. In fact it is so common as far south as 36 degrees that the Indians use the seeds and the tubers as food. I have tried them myself but prefer Corn and Potatoes. In regard to N. speciosum, judging from personal observation, it seems to succeed about like the former. Friend Lyon is mistaken as to its being tropical in its nature. Here in the pond on the grounds of the Department of Agriculture, at Washington, where we have ice thick enough nearly every winter for skating, it grows in luxuriance and does fully as well as its congener. This year we had blooms ten inches in diameter, of a beautiful rose color. At the home of my venerated preceptor, Dr. J. A. Warder, near Cincinnati, Ohio, I have seen it doing equally well. On the grounds of Michigan Agricultural College, at Lansing, I saw it blooming last year, but not nearly so large and rampant as farther south. It had stood the winters there for years, so Dr. Beal told me. Both these plants will grow in the ponds of any of our Northern (except extreme North) or Central States, and I believe will do even better in the Southern States.—H. E. Van Deman.

New Sweet Peas: A Yellow Variety. Mr. H. Eckford must be congratulated on the batch of charming new varieties of Sweet Peas he sent to a recent meeting of the London Horticultural Society. Mr. Eckford is raising new and distinct varieties that are gladly welcomed by those who take delight in these fragrant Sweet Peas. First class Certificates of Merit were awarded to Mauve Queen, the standard and wings delicate mauve, pretty in color and very distinct; Splendor, an extremely beautiful rose-colored variety, bright in color, large and stout in all its parts—distinct and very fine; and Primrose, pale primrose, the first real advance towards a yellow Sweet Pea—distinct and attractive. Two other varieties deserved this award, because of their distinctness, viz.: Apple Blossom, clear, pale rose standards, delicate blush-pink wings and keel—very pretty; and Miss Hunt, pale rosy-salmon, slightly shaded, delicate rosy-mauve wings and keels—very pretty. Other good varieties were Mrs. Eckford, standards white, flushed with pink, and slight flakes of rose, white wings—pretty and distinct; Delight, the standards delicate pink, the wings white; and Maggie Ewing, the standards and wings suffused with pink, and white keel. Two pure white varieties were also shown. In the case of one of them the flowers were large, stout and very pure, and it may be regarded as an advance upon the old white.—Gardeners' Chronicle.

Flowers and Locomotives. The juxtaposition of flowers and locomotives seems unnatural at first glance. Along the line of the Boston and Maine Railroad there are pretty little flower beds at many stations, and the corporation, by the offer of premiums, encourages the station agents to make the parterres and the turf as beautiful as possible. A number of the station agents have shown admirable taste in the arrangement of flowers. On the Maine Central this feature is developed even beyond this. Around the depots are little bits of velvety turf, and worked out in Coleus or some other rich colored plant is the name of the station—a commonplace sort of idea, but combining usefulness and beauty. At Brunswick the station surroundings are really charming, and in the bit of rich turf which blazes in the deep garnet of the Coleus the word "Brunswick" makes a pleasant spot for the wearied traveler's eye to rest upon. At one little station just outside of Portland the Coleus-made word springs from a bed of golden-tinted soil, and the combination is striking. On the eastern division of the Boston and Maine a beginning has been made in station floriculture. In the yard of the round-house at Prison Point turf is being placed, from which will rise a clump of bright flowers. The iron horses stand about this bit of garden unmoved by the temptation to graze. And really, why shouldn't the approaches of a round-house be made beautiful? There is abundant opportunity for beautifying the hot and cindery spaces where the locomotives stand impatient and expectant. A little turf and a few flowers would make all the difference between the dry and dusty and the refreshing and inviting. A pleasing and tastefully kept station is an ornament to a town, a credit to a railroad, and recommends a community to those looking for a home.—Boston Transcript.

Floral Notes from Our New York Correspondent.

The season in New York has begun with a certain scarcity of flowers, unfavorable weather having set back the crops to a certain extent. The winter trade seems likely to be very active, as there are to be many social events calling for the florist's art. There is a greater elaboration of floral work now at such informal events as afternoon teas and at homes, which formerly called for but little of such work. With December the ball season began and this called out a lot of floral work.

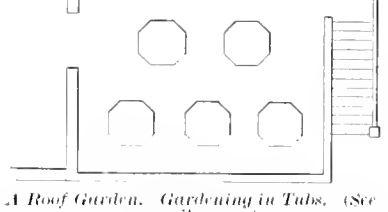
The numerous fashionable weddings in November and December, while consuming a host of flowers, showed little novelty in their arrangement. In a great many cases the bridesmaids carried huge nosegays of such Chrysanthemums as Elaine or Mrs. Mary Morgan, usually trimmed with light ferns, which are very unsuitable for such comparatively coarse flowers. Yet this combination is made by florists otherwise remarkable for their taste, though a heavier foliage, even such as outdoor autumn leaves, has a much better effect.

Roses and Lily of the Valley still make the favorite bride's bouquet; they are immense bunches, made with apparent carelessness, but real art. A half dozen or so of the Roses are put pointing downward, so that when the sash is added, the stems are hidden.

Corsage bunches are made in similar style, some of the florists adding a ribbon sash to them also, but this is certainly a tasteless proceeding. This matter of ribbon has been greatly overdone of late by the florists, and should be discouraged by women possessing a refined taste. Corsage bunches are most desirable when made of one variety of flower, though one occasionally sees attractive combinations. A long bunch of Lily of the Valley, with a base of Violets, was very pretty; so was a combination of Marechal Neils and Violets. American Beauties and Roman Hyacinths combine attractively for this purpose.

The competition for the Langtry cup, offered by the New York Horticultural Society for the best room decorations, called out some very good work. The premium called for decoration within a space of thirty by fourteen feet, suitable for a wedding or reception. The prize arrangement was exceedingly simple; a group of Palms and Cycads forming a sort of alcove with some slight furnishing; a little table bore a dainty plateau of Adiantums, and there were some further groups of Palms about the mimic doorway and in the corners. There were no glaring colors; nothing but the restful green of the foliage, while the arrangement was beyond praise. There was nothing remarkably original about this decoration, but it was an exquisite piece of work.

Taken all around, the floral designs, as well as the cut flowers, were better at the late show in New York than that at Philadelphia, though the Philadelphians undoubtedly beat us on plants. Mr. Craig's twenty-five plants were universally admitted to be the finest Chrysanthemums ever exhibited in this country. One plant in particular, a specimen of Cullingfordii, was a mass of rich crimson flowers, and might be considered the star plant of the collection. But the designs were poor; floral artists have not yet struck the right idea in making up Chrysanthemums. A perfect funeral design was a broken column, made solid, so as to give the effect of marble, with a piece of silver tissue draped carlessly over it in statuesque folds. The prime idea in this

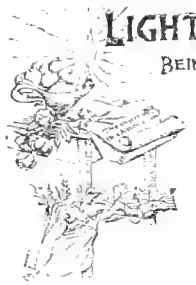


A Roof Garden. Gardening in Tubs. (See opposite page.)

design should be to give the effect of marble; the column itself should never be broken up with mixed flowers.

Many of the new baskets are exceedingly pretty in shape; one graceful style is a square of willow loosely curled up at the corners, the handle going diagonally from corner to corner. This is beautiful when filled with Ferns. The loose rush baskets resting on an easel are still popular, and ornamental vases are more varied than ever; pottery and ribbons it appears are very necessary adjuncts to a florist's store, nowadays.

EMILY LOUISE TAPLIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

An Abutilon of pendulous habit was shown at the last meeting of the Society of American Florists. Were it not for the fact that this pleasing quality appears to have been secured at the expense of fine flowers it might be considered a desirable acquisition. The flowers are said to have been very inferior.

The Pennsylvania State Society. The 29th Annual meeting of this Society will be held at Lebanon, Pa., on Wednesday and Thursday, January 18th and 19th, 1888. Arrangements will be made for special rates at the hotels, and excursion tickets will be issued over a number of roads. Full particulars of E. B. Engle, Secretary, Waynesboro, Pa.

Mice in Orchards. A mode of protection is described in the proceedings of the Maine Pomological Society. The writer has found that mice will not touch the bark when they can get enough oats to eat. He carries oats into his orchard late in autumn, and drops handfuls, especially where the snow drifts. Since he has adopted this course he has had very few trees injured, where previously he lost them by the hundred. He thinks he can winter mice more cheaply on any kind of seed or grain than on Apple tree bark.

Native Maiden-Hair Fern for the House. Before the Michigan Horticultural Society, Mr. Garfield spoke of this plant (*Adiantum pedatum*) as being one of the most handsome for the decoration of rooms and as not sensitive to a change of air. It needs but a short period of rest, being beautiful nearly the whole year round. Mr. Watkins said that plants can be obtained from the woods at any time when the ground is bare, and that they will start growth in a few days. It will do well with but little light.

Small Fruit Obstacles. Mr. C. L. Smith, of Minnesota, puts down the obstacles in the way of success with small fruits in the following order: 1. New and untried sorts, at high prices, which the farmer is induced to buy, not because they are the best for him to plant, but because the dealer can make the most profit out of them. 2. Careless packing and handling. 3. Poor preparation of the soil and careless planting. 4. Weeds, grass and stock. 5. Neglect to give winter protection. 6. Drought. 7. And least of all, cold.

Destroying Mealy Bug on Plants. I am very glad to say that we have found a very simple remedy in the use of one pint of fir-tree oil to ten gallons of water syringed on once a week, and the syringing to be continued. The value of an insecticide, in my opinion, consists not in one, two or three applications, but in a continuation of the application. I had a house of Crotons fully covered with mealy bug and scale. We began about nine months ago with this fir-tree oil. It cleaned the house completely and left not a vestige of mealy bug.—*P. Henderson, before the Society of American Florists.*

Western New York Horticultural Society. The thirty-third annual meeting of this famous old society will be held in the Common Council chamber in the City of Rochester, commencing on Wednesday, January 25, 1888, at 11 o'clock. A general invitation is given to all who are interested in fruit culture, horticulture and rural improvement, to attend this meeting, whether members of the society or not, and participate in the proceedings. Kindred societies in this and other States are requested to send delegates to represent them at this meeting, and all such delegates will be kindly received and invited to join in the discussions. Programme with particulars may be had of P. C. Reynolds, Rochester.

The Question of Varieties. A. A. Crozier in commenting on the American Pomological Meeting, makes the following remarks: Time and again, in the midst of other business, a discussion would start on the merits of certain varieties, nor was this by any means confined to the newer sorts. The fiercest debate of the session was over the long mooted question, "*Is the Wilson the best Strawberry?*" But when there was a discussion on varieties all were interested. That was chiefly what members came together for; they had plants to sell, or wanted to know what sorts to grow. The broader, more scientific questions they chose to leave to others.

The Early Harvest Blackberry. There is no other berry that can be planted in our section of the country that I think will bring as much money to the grower as the Early Harvest Blackberry. I was astonished last year to see how well my plants did. The berries were larger and handsomer than I had any idea they could be, and for picking they are the prettiest Blackberry I ever saw. I would like to know if there is anyone else that has had so favorable experience as I have. You cannot raise this berry where the mercury falls lower than 15 degrees below zero and have them do anything. Mine are all laid down and covered with earth, and I expect to get some money from them next year.—*E. H. Cushman to the Ohio Horticultural Society.*

Association in Factory Towns. There is a decided interest among the employees in some of the larger factories on the subject of fruit raising. The larger number of these amateur fruit enthusiasts work in Wheeler & Wilson's, and they are in the habit in the fruit season of holding little private fruit exhibitions among themselves. Some excellent specimens have been on view at these shows. A Stratford man has raised and shown some fine specimens of Pears. In fact, Pears are a favorite exhibit among them all. In connection with this subject it may be interesting to know that an East Bridgeport man went to New Jersey with some specimens of Gooseberries of his own raising. He went down into the very center of the best Gooseberry raising section in the country perhaps, and entered his Gooseberries at a fair in competition with the best that could be grown, and won a first prize. His Gooseberries were about an inch long and large in proportion.

Know the Insects. Dr. J. A. Lintner summed up the points of his remarks concerning the fruit grower's knowledge of insects, at the last meeting of the American Pomological Society, as follows: 1. He should be acquainted with the more common insects that occur in his vicinity, their names (not necessarily the scientific ones), their injuries and their habits. 2. He should be able to detect new insect pests, so that he could promptly submit them for scientific study. 3. He should be able to distinguish between insect foes and insect friends, so that in fighting the former he will not destroy the latter. 4. He should be able to refer them to each one of the several orders to which they may belong, so that he can speak or write of them understandingly, without grouping them all under the name of "bugs." 5. He should know the manner of insect feeding, whether by means of biting jaws or with a proboscis, so as to be able to employ the proper class of insecticides. 6. He should experiment with such remedies and preventives as his own observations and experiences may suggest. 7. He should avail himself of the publications in economic entomology relating to fruit pests, which are numerous, and of great service.

Go to the California Meeting. The next meeting of the American Horticultural Society, as has been previously announced, is to take place in California, commencing on Tuesday, January 24th. It will be held in two sections, viz.: the first on the above date at San Jose, and continuing for two or three days, and reassembling at Riverside, February 7, for a similar length of time, to be devoted to topics of greatest interest in Southern California. This arrangement, without additional railroad expense, will enable those in attendance to visit almost the whole of the exceedingly interesting State of California. To secure a reduction of twenty dollars ($20.00) on the round trip rate the society will start from Kansas City at 9:30 A. M., on Thursday, January 12, 1888, by special train, on the Missouri Pacific Railway. Round trip tickets to San Francisco $60 from Kansas City, Atchison, Leavenworth, Nebraska City and Omaha; $72 from St. Louis, Cairo, Little Rock and Memphis; $69.85 from Hannibal; $66.50 from Moberly; $80 from Chicago and Indianapolis; $85.60 from Cincinnati; $89 from Toledo; $75 from Bloomington, Ill., and corresponding rates from all principal points. Full particulars will be given by Secretary W. H. Ragan, Greencastle, Ind., on receipt of stamp.

Hybrid Perpetual Roses at Christmas. Mr. Chas. Anderson, before the last meeting of the American Florists, said that in order to bring Hybrid Perpetual Roses into bloom successfully in December they must have been prepared six or eight months previously; first, by securing for them the strongest possible growth that could be got; and, next, by causing the plants to be dormant earlier than they naturally would be. The times and conditions at and under which this treatment should be practiced are to be determined by each grower individually. The great secret is to prepare the plant by a strong growth. It is by the growth in April, May and June that you get the flowering wood from which to produce flowers on these Roses. Even if we assume that they have been properly prepared, experience is needed for selecting them. Possibly out of one thousand plants not more than five hundred would be fit to be turned to rest. The time in one locality might be the 5th of August, and it might be the 15th or 20th of August in another. If rainy weather should prevail at the time at which the plants are turned on, of course the object will be defeated, as they will not dry out. The whole point consists in producing by drought the usual results of frost.

Thorough Culture In an essay on this subject before the Montgomery (Ohio) Horticultural Society Mr. A. Shirer closed as follows: Thorough cultivation does pay. The yield of new varieties is the strongest evidence for thorough culture. The owner of these pets bestows all possible care on them, and the old, well-tried varieties he merely keeps alive; then he draws his comparison. Six hundred bushels of Strawberries per acre, 500 bushels of Blackberries per acre, 300 bushels of Raspberries per acre are obtained by "eternal vigilance." A little farm well tilled seems to have been a song of the oriental horticulturist, but the epoch is at hand when the question is, not how many acres we can gobble in, but on how few we can make a comfortable living. The acreage must be reduced to a minimum and the yield increased to a maximum. The exhaustion of the soil, the more rapid evaporation, the frequent droughts, the severity of our winters, higher taxation, are all arguments for a little farm well tilled. The unprecedented drought of the present year, though dear to many, is a lesson that we all should heed. Thousands of dollars might have been realized had we taken time by the forelock and prepared for the worst, as we always should. Only those who, like in every other profession, bestow thoroughness will reach the summit of financial success.

Women in Horticulture.

[*Extract from a paper by Jonathan Periam before the Illinois State Horticultural Society.*]

I return to the true sphere of woman in horticulture, and that is the adornment of home. If woman must labor outside of this sphere in well-to-do life, the department of horticulture throughout offers superior and pleasanter labor and healthier employment than any other of which I know.

In all my own many years of experience as farmer, stock-raiser, and then as vegetable and fruit gardener, my recreation was ever that of floriculture. One year it might be Dahlias; another Gladiolus. I remember I never was happier than when as a young man I had succeeded in getting together sixty varieties, combining varied forms and colors, out of many hundred tried. Later it was bedding plants and curious forms of foliage plants. I have taken many premiums on live stock. I have taken premium after premium for displays of garden products, both for quality and arrangement. But they were as nothing to the triumphs of my flowers that had been my recreation rather than my care.

The crowning success was that of receiving the first premium at the first great Chicago fair some years ago for the best amateur collection of house plants, besides a number of premiums for special plants and hanging baskets. A lady from Iowa received the second premium, and in special plants held me fully even. This lady had found the second Eden; had found that the flowers of Eden might be trained to the sun in this paradise of America, the sunny and glorious West.

The increasing taste for flowers in cities, villages and about many rural homesteads is due largely to the influence of woman in horticulture. The cultivation of flowers is not possible among the masses until advancing civilization, and the wealth it brings, enables the owner of the homestead to gratify the taste of the family largely in this direction; but a beginning may be made at every homestead, however humble.

To do this, however, certain plants must be kept over winter. Tender Roses and other tender hard-wooded shrubs, tubers and bulbs may be kept in a dry cellar that does not freeze. Succulent plants must be kept over as window plants, and to ensure success here that part of the room must never freeze, though a high temperature is not necessary night or day. This continual tem-

perature costs barely more than to let the fire die out in cold weather. It takes little more fuel, since once the room and the walls are warm, comparatively little fuel is required to keep it so.

Double windows are necessary to prevent drafts of freezing air from striking the plants in severe weather. These double windows are really an economy in the country, since it prevents drafts and enables every part of the room to be kept alike warm. Neither are plants and flowers unhealthy in living rooms, as ignorant persons have supposed. The reverse is the case.

The study of horticulture, as woman's province, is not all grinding labor. It will lead her thoughts into the realms of chemistry, of botany, of physiology, of logic, philosophy and political economy; of zoology, ornithology and entomology. Two of the brightest of earth's women have become famous in the cognate study of entomology through their love of horticulture. One in the United States is Miss Emily A. Smith, and the other, in England, is Miss Omerod.

Every lady who exercises the love of the beautiful in the study of horticulture in any of the branches will receive the kindly love of all who have the happiness to know her. Her influence will be wider spread than she may think. The beautiful garden will, perhaps, inspire some passer-by to institute, perhaps in some humble home, the lesson she has learned in passing. The grinding man who witnesses the pleasure that happy children take in playing on the lawn, among the shrubs and flowers, may be tempted to place his children upon a higher plane by assisting them in preparing something of the kind for themselves. The tired wife will thus get added enjoyment. The girls will not grow up hoydenish, the boys will come to love home and leave the dance-house and the corner grocery for the higher and quieter home pleasures. There will be unity and love, and helpful assistance one to another. They will grow up wiser and better, and happier men and women. Hence we shall see that woman in horticulture may become a far-reaching integer, and one of the most powerful, in the future of a country whose young growth so far has been the wonder of the world.

Promising Wild Fruits.

[*By A. S. Fuller and others before the American Pomological Society.*]

Mr. Fuller said in substance that for more than 200 years immigrants from Europe brought the varieties of Grapes with which they were acquainted, not doubting but that they would succeed. For ages our native species were neglected, and it is now but barely 50 years since we have awakened to the fact that the latter possesses merits worthy of our attention. We no longer seek foreign Grapes. It is true there is yet room for improvement in our native Grapes, but they have passed that stage which we call merely "promising." Our best sorts come from wild stock and any trace of foreign blood is looked upon with distrust.

The Raspberry was cited as another instance of a valuable fruit in which the native kinds are driving all foreign sorts from the market. Time was when none of the natives were considered worthy of a place in our catalogues; they were not thought good enough for the table. Now they are the hardiest and most reliable sorts we have. In 1852 this society catalogued only four Raspberries, all foreign. No native red sort had been heard of. In 1862 only seven were on the list, all foreign. As late as 1868 no one suggested a native red berry; but in 1885 out of 30 varieties catalogued 25 were native. It is now evident that we have no further use for foreign Raspberries, and even those of our natives containing foreign blood are apt to be regarded as delicate and of doubtful value.

Then as to Strawberries, we made no progress until we began to build on the wild stock. Also the Blackberry; our native Blackberries seem to be turned out in a very perfect state and we have only to select the best varieties from the woods, and yet there is room for improvement. All this warrants further trial by selection and the crossing of other native fruits.

Speaking of the June-berry, or Service-berry, (*Amelanchier Canadensis*), he said the typical form of the plant is a tall tree 30 or 40 feet high, and from that all the way down to the small shrubs which now produce our best fruit. He suggested that this species be hybridized with the Apple or other tree fruits. This does not seem impossible; somebody must try it, that's all. The Amelanchier belongs to the Apple family, and the blossoms are similar.

The Missouri Currant is another wild fruit which should be cultivated and improved. As to Gooseberries, the foreign sorts cannot be depended upon. We must use our native varieties, although they are not so good in flavor. So far the wild species has been much neglected.

Then there is the Huckleberry. The idea that it will not thrive in any ordinary garden soil is an erroneous one. He had grown the High-bush Huckleberry for 20 years, and had found no difficulty whatever. It is as easy to transplant as the Rose. All you have to do is to cut it back well and see that the roots don't get dry. Berries half an inch in diameter are produced by selecting the best plants, and good culture might secure an improved form of this one of the most popular and best of our wild fruits.

The Persimmon, especially the larger kinds, should be placed very near, if not at the very head of the list. There are many excellent wild varieties. Persons who are at all familiar with it will become pleased with the taste. The recent Japanese varieties are far superior to the European Plum in flavor, but they are not hardy north of Washington. Northern pomologists should cross or hybridize these with our native sorts and seek to combine the hardiness of the latter with the delicate quality and larger size of the Asiatic species.

The wild Plum is well on the way to become one of the most valuable native fruits. Several varieties now in cultivation give hope of something still better in the future. We now cultivate only the foreign Cherry and its seedlings; but we have several native sorts. Two of these have inflorescense similar to the foreign Cherries, making it possible to cross the two. The dwarf is the most promising, but too poor in flavor in its wild state to warrant cultivation.

The Paw-paw for large size, productiveness and luxuriant growth of tree is likely to become one of our most valuable fruits. The flavor of the wild species should be improved. There are several kinds affording chance for experiment; but as they do not bear early it will require some time to reach definite results.

Mr. Barry inquired whether the improved American Raspberries did not contain some foreign blood. Mr. Fuller had been unable to find any in them. President Berckmans spoke highly of the Cuthbert. "Its advent in the South marked a new era in Raspberry growing there," said he. Some member having alluded to the difficulty of transplanting certain wild fruits, Mr. Fuller replied: "I have yet to hear of a single plant that cannot be transplanted successfully unless it is the Tuckahoe of the South. The trouble is lack of skill in the operation."

Mr. Barry spoke of the Raspberry improvement in this country. He was glad to know that we had arrived at that state when the presence of any foreign blood could at once be detected. Up to the introduction of the Cuthbert it was always necessary to have a foreign variety. The Cuthbert was a great improvement, but for flavor he preferred Brinckle's Orange to all others. But the man who introduced the Cuthbert Raspberry he regarded as a public benefactor, though in quality it is not equal to some of our foreign sorts.

Dr. Hoskins doubted that nearly all our Raspberries were true native seedlings. He thought seeds of foreign sorts might have been planted by birds, and that varieties like the Cuthbert may have originated in that way. But Mr. Fuller said it was impossible to deceive skilled botanists in that way; whatever the ordinary eye and taste might dictate, the botanist could always detect the slightest trace of foreign blood.

A Talk About Pistillate or Imperfect Flowering Strawberries.

[*Discussion before the Ohio State Horticultural Society.*]

Secretary Campbell.—It seems to me that in this age of Strawberry improvement we ought to require that a new variety shall have a perfect blossom (stamens and pistils both present). If it is sufficiently productive, it seems to me a very great advantage.

Mr. Palmer.—It is very easy to plant Strawberries so that the pistillate (imperfect) varieties can be fertilized. I plant alternate rows, and the nearer they are, the better. In unfavorable seasons, when we have late frosts, I have discovered that the pistillate varieties will stand more freezing than the staminate (pollen bearing). I remember one season when I had Sharpless that occupied a row all the way across the patch, about ten rods long and three feet in the row, there was a frost the 29th of May, when they were in full bloom. It destroyed the fruit on a great many varieties. The Windsor Chief and Crescent escaped. While we didn't get three quarts from the Sharpless and other staminate varieties, we got a full crop from them.

Mr. Pierce.—We should go slow in making a requirement of the perfect Strawberry that it have perfect blossoms.

Secretary Campbell.—My idea was not to object to anybody planting the pistillate varieties, but for a perfect Strawberry I think it is an advantage to have a perfect blossom; and for new varieties we ought to give the preference to those that are perfect.

Mr. Pierce.—I think it is an open question whether the pistillate varieties are any stronger, or will stand frost better than those that furnish pollen in the same blossom.

President Ohmer.—The advantage of planting staminate varieties is, that you do not need to take pains in planting to avoid getting them mixed. The pistillate varieties, when distributed among the staminates, it seems to me, will bear the bigger crop.

Mr. Palmer.—Excessive rains, or continued rains, that continue two or three days, will often destroy the staminate blossoms; and the pistillate varieties seem to stand better than others.

Mr. Crawford.—There is another characteristic of the pistillate varieties, which is: you are not under the necessity of growing them in hills. I don't know a single pistillate variety but what will do well in matted rows. I have known for years that the pistillate varieties are the more reliable. The Crescent Seedling is the most reliable of berries.

Secretary Campbell.—There is still one other fact in regard to this pistillate Strawberry question: many, and doubtless most of them do, have some pollen. If you examine the blossoms of the so-called pistillate varieties, you will find that around the base of the pistil there are short filaments and some stamens; and I have no doubt that many of them do partially, and some perfectly, fertilize. A good many persons have told me that they have had so-called pistillate varieties bear good crops, with staminates nowhere near them. I am quite sure they often do have stamens enough to fertilize and bear fruit.

Mr. Farnsworth.—I know at least two instances in our county where I have proof that the Crescent produced good crops without any other variety near it.

Mr. Weltz.—Mr. Campbell is perfectly right in my opinion. The Strawberry belongs to the family of Rosaceæ; there is no doubt that a number of Strawberries known as pistillate have some flowers in which the stamens do not come to perfection, while others have stamens sufficient to fertilize the berry. I have experimented considerable, and it is so with the Crescent. I have them planted by themselves, just for the purpose of testing it; and I have found that if you give the Crescent a little poorer soil it impregnates itself. And I am quite satisfied that by starving it sometimes, or under other circumstances, the so-called pistillate Strawberry can be made to fertilize itself.

Prof. Lazenby.—The subject has been for some years an interesting one to me, and at our Station we have conducted some experiments, not so much with reference to this particular fact, though we have reached some data that bear upon it. For instance, two years in succession we covered quite a large number of pistillate varieties of Strawberries so we were sure they did not receive pollen from other sources. In every case they failed to produce any berries, although the plants were thrifty; and the plants under the same conditions that were fertilized by the pollen from outside bore an abundance of fruit. It seems, as Mr. Campbell says, that partially abortive stamens are found in many of the blossoms. We tested them for two seasons. The experiments were conducted with a good deal of care; and a good many different plants showed that the pistillate varieties, those that we recognize as pistillate, where pollen was kept away, did not produce any fruit. There is one point in this discussion I think we should remember. We all know that a cross in Nature is generally productive of health, and vigor and fruitfulness. Now the advantage, it always seemed to me, that a pistillate variety has, is that it always secures a crossing. I do not mean by this that varieties that bear perfect flowers are

not strong and well fertilized; but I think, by having a pistillate you are more apt to secure a crossing, and this as a rule gives better fruit.

Mr. Green.—There is one thing further, in explanation, that I think will help to harmonize the two views. I have never examined any so-called pistillate variety in which I found no pollen. They all have a little. Perhaps I may except the Cornelia. It seems to me if there is only a little, in growing out-of-doors, the insects might distribute it so as to fertilize the fruit; but when covered it could not be thus distributed. I do not believe the wind has much to do with it; I think it is the insects.

A Wisconsin Method of Covering Raspberries and Blackberries.

[*Mr. Plumb and others before the State Horticultural Society*].

The Ripon people have been very successful in the practice of laying Raspberry and Blackberry bushes down for winter protection. Their way of laying them down is by the help of a plow, which is run close alongside the row, the dirt being thrown away from the row. The surplus wood is removed from the bushes.

A man follows the plow with a spade and after loosening up the earth about the roots on the side towards the furrow he pushes the plants down and covers the top with earth. The roots are like ropes and will not break. Mr. Plumb thinks that this is the most economical way of protecting Blackberries. Mr. Stone's great success with Blackberries was accomplished on poor land. The manure and the cultivation were applied early in the season, and in that way strong canes were secured before winter. He thinks we should take the best protection for the bushes that we can get. The plowing between the rows does not materially increase the number of suckers. The plowing may be done as near as possible to the bush and no injury will result.

Mr. Tuttle stated that his Blackberries had been killed above grond last winter, owing to their not being protected. Mr. Hoxie was opposed to the State Society any longer giving countenance to the assertion that the Snyder and Stone's Hardy blackberries will do without protection. Mr. Plum stated that he advised a neighbor, who was planting a patch of Blackberries, to keep them cut back to one foot. The neighbor kept them cut below two feet, and they proved a success. Mr. Tuttle stated that he had tried the same plan but met with no success. Mr. Jeffries had pinched the Stone's Hardy back, but had not protected it, and it had been killed.

Annual Meeting of the Michigan Horticultural Society.

Best Winter Apples for Home Use. Discussion was opened by Mr. Garfield, who thought one of the best was the Oakland. With him it was a better keeper than the Spy, Jonathan or Baldwin; a good bearer and fine grower.

Mr. Lyons.—The Shiawasse Beauty is a fruit that deserves mention in this catalogue; better than the Fameuse, of which it is a seedling, resists scab more perfectly and is a better keeper.

E. C. Phillips.—My List of Apples for this purpose is Jonathan, Wagner, Red Canada, Northern Spy, Shiawasse Beauty and Greening.

Geo. P. Peffer, Wisconsin.—The Red Canada we can grow pretty successfully within 30 miles of Lake Michigan, even on our side of the lake. The Wealthy is a good variety but overbears, and thus becoming reduced in vitality it succumbs to severe winters. Clark's Orange, somewhat like Fameuse in its tendency to scab, but is a valuable sort with us; Pewankee is a very good sort for our climate.

Mr. Pearsall.—I think no list of Michigan Apples is complete without the old Greening.

Prof. Bailey.—Don't leave out the Westfield (Seek no Further). I put it my cellar in preference to everything else. It is hardy, a good bearer, and although not handsome, it is like some plain featured people, good inside.

Mr. Peffer—And it is hardier than the Spy.

Mr. Lyon.—I should dislike to leave out of this list the Golden and Roxbury Russets. They complete the round of the season until we have Strawberries from our own vines.

W. W. Tracy, Detroit.—No early winter Apple equals the Hubbardston. It is not showy enough for market; growers know enough not to try to sell the product, for it is unexcelled for house use. Several others strongly endorsed the same.

Mr. Peffer.—Perry Russet is of considerable value. It needs a dry atmosphere, hence does better on knolls, while the Golden Russet thrives better on lower, more moist ground.

Mr. Lyon.—I wish to speak a good word for Morton's Melon. It is of excellent quality.

R. D. Graham.—Grime's Golden is a favorite Apple for home use with me. It is of good quality, medium size, handsome in color, a good keeper and fair bearer.

Mr. Lyon.—I supposed it to be a shy bearer.

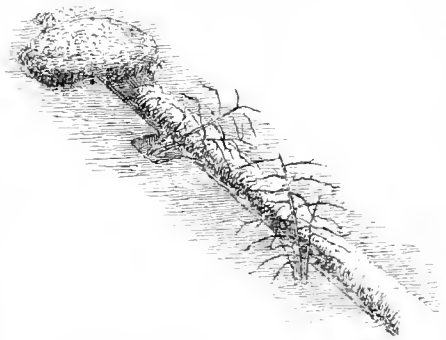
Prof. Bailey.—It is as productive as the average of winter sorts that are dessert Apples.

Prof. Satterlee.—I would place Northern Spy nearer the end of Mr. Phillips' list.

Prof. Bailey.—The Mother is worthy a high place in the list.

Prof. Satterlee.—How about the McClellan? I have seen it at fairs and admired it.

Prof. Bailey.—It is an Apple of the Seek no Further type, and even better in some points.



A Wisconsin Method of Covering Blackberries, etc., beginning by Plowing a Furrow.

Vegetables. Mr. Root, Ohio.—When I was a lad I was turned over to my mother to tend garden. We made the garden a source of profit that surprised the natives. I still garden for the fun of it. But my surplus is sold to those less fortunate, and it is delivered by wagon in a fresh condition. We have proven that Peas are at their best when shelled and cooked immediately after picking, and Strawberries are worth 3 or 4 cents a quart more when picked fresh from the vines. I make some money by taking advantage of these facts. Another strong point in amateur gardening is the stimulus given to little people in the work.

Prof. Bailey.—It is a mistake to place the money outcome too prominently in advance of the heart work of the occupation. I want my students to absorb a love for garden operations, so that in whatever occupation they may engage they will carry this love for the garden with them.

Robert Graham.—I wish to say a word about quality in vegetables. You cannot get it in a muck bed; you may grow large and beautiful samples on well tilled muck, but the highest quality and best keepers are secured on upland. Of course it is more expensive growing on high land, and in dry seasons some failures ensue when the best conditions are not to be had, but the best vegetables are grown there.

Prof. Bailey.—One of the surest and most profitable crops I have is grown in spent hotbeds. I have paid for the sash by this catch crop.

Prof. Satterlee.—I get a good deal of satisfaction from a small area devoted to a garden on a city lot. As a supplement to close office work there is nothing better than the care of a garden.

Robert Graham.—There is everything in the selection of a good site and soil for a garden, and in a dry season it is important that vegetables have room to grow. Over size is to be deprecated.

Mr. Garfield.—And yet it is the big vegetables that take the money at the fairs.

Landscape Gardening and Other Points. Mr. Peffer.—In Wisconsin we are dropping out all unnecessary road and division fences in cities and villages. This improves the appearance of the homes and makes better neighbors.

Prof. Bailey.—Here in East Saginaw are some capital illustrations of the desirability of removing front and division fences. With a fine margin of grass between the walk and the pavement the street is given the appearance of a boulevard, when actually the road bed is but 30 feet wide.

Dr. Whiting.—The removal of front fences is all very nice if one is forgetful of how soon his fine plants will be stolen, his flowers destroyed and his premises despoiled by marauders.

C. T. Rosencranz.—I am glad that I live where good fences are kept up. With regard to depredations of small boys, I can illustrate how I have succeeded with them. A crowd was found appropriating some hard worthless Apples. I explained that I did not allow people to take Apples, but if they had asked I would have allowed them pockets full of fine Benoni Apples. This statement spread and I had no further trouble.

Mr. Tracy.—My way is to turn upon the boys and show that they have rights worthy of my respect. Many children disrespect the rights of others through not possessing things of their very own, and over which they have absolute control. A word about lawns. I have watched a good many lawn makers in Detroit; the rule is to smooth off the yard which has been filled with dirt from the excavation of the cellar, then steal some sod out in the suburbs, lay it down and set the sprinkler going, giving it just enough water to keep the green color in the leaves. This always results in disappointment. It pays to prepare the soil deeply, then either turf or seed. I prefer the latter, and when water is given soak the ground as good rain would do. This induces the grass to root deeply and renders the lawn permanently able to resist a drought.

Prof. Bailey.—Thorns are valuable for decorative purposes; (1), on account of showy flowers (2), leaf character (3), attractive fruit (4), delightful habit of the plants. The last two are the strongest points. The large-fruited Thorn (Cock Spur) drops its fruit early, because of the investment of insects, and so loses a strong point that would otherwise be in its favor. The small-fruited species have not this fault, for they hold their fruit into winter. The forms of Thorns are very marked aud attractive, even in winter when foliage and even fruit are gone. These trees are somewhat difficult to transplant and also difficult to start from seed; they germinate very slowly. By stratification of the seeds and allowing them to remain a year one can have fair success.

Mr. Garfield spoke of Ferns as delightful accompaniments to the yard. They can be transplanted easily; would place them in the foreground of a clump of shrubbery instead of near the house, so as to be in view from the windows.

The following points about transplanting were brought out. The best trees are those well grown in the nursery. In getting trees from the forest or in truth in moving large trees from anywhere it is well to prepare a year before hand by cutting a trench about the tree and filling it with light litter; then by careful removal the check will be very slight. Tramping the earth about the roots was mentioned as important. The character of the day was more important than the season.

The Summer Propagation of Roses.

(*Continued from page* 54.)

Best Varieties. The prime requisites for a good bedding Rose are: 1st, color, form, size, texture of bloom. 2d, vigor of growth and healthy leafage. 3d, freedom and continuity of bloom. The best twenty-five everblooming Roses for bedding purposes measured by the above standard are: La France, Perle des Jardins, Catharine Mermet, Marie Guillott, Sou. de la Malmaison, Marie Van Houtte, Mme. Gabriel Drevet, The Bride, Sou. d'un Ami, Countess de la Barth (or Duchess de Brabant), Chas. Rovolli, Mme. Angele Jacquier, Mme. Welche, La Princess Vera, Sombreul, Gloire d'Dijon, Comtess of Pembroke, Letty Coles, Pierre Guillott, Papa Gontier, Antoine Ferdier, Sunset, Mme. Jos. Schwartz, Comtess de Barbatannes, Hermosa.

Among the following sorts some possess charms unsurpassed by our first list, and we would not like to see them discarded for little faults of constitution or habit; they are: Coquette de Lyon, Mar. Robert, Mme. Watteville, Mlle. F. Kruger, Mme. Cusin, Devoniensis, Mme. Dubroca, Edith Gifford, Camoens, Grace Darling, Comtess Riza du Pare, Etoile de Lyon, Mme. Jean Sisley, Queen's Scarlet or Agrippina, Mme. Lombard, Jeanne Abel, Maurice Kuppenheim, Henri Meynadier, Clement Nabbonnand, Mme. Falcot.

A group of pets of singular beauty, but of not strong constitution, but well worth extra care: Ye Primrose Dame, Valle Chamounix, Sou. Therese Levet, Mme. Capucine, La Nuance, Princess of Wales, Katie Metchersky, Nathalie Imbert, Viscountess de Cazes, Comtesse de Nadiallac.

Of later introductions to the ever-blooming classes the following, I think, will rank among our standard sorts: Countess Frigneuse, a beau-

tiful yellow of delicious scent, Viscountess Folkestone, almost ranking with La France, Susanne Blanchet, an exquisite shell pink of splendid form, Reine Nathalie de Serbie, a distinct-habited tea with finely formed flesh-pink flowers; Meteor, a hybrid tea of bright crimson color; Mme. Perreau, a bright silvery pink seedling of the well known Sou. d'un Ami; Mme. A. Etienne, an apparently dwarf-habited Catharine Mermet with charming buds of light pink; Luciole, a highly colored peachy crimson, charming in its tints and deeply scented—the premier Rose of this year.

We have gone through the list of best Roses, now let us reverse the matter and ask, why grow Mme. Bravy, Mme. L. Ferrier, Mme. Denis, Lady Warrender, Mme. Villermoz, Cornelia Cook, Bella, Mlle. Rachel, Souv. Geo. Sand, Tri'd Milan, when The Bride, Marie Guillott and Sombreul combine more good qualities than are to be found in the whole list of white varieties mentioned.

Among pink varieties, commencing with Adam, Camille Raoux, Marguerite Ramet, Flavian Budillian, Rose Nabbonnand, Bougere and Le Florifere, all the good qualities of these varieties may be found in C. Mermet, La France or Sou. d'un Ami. Among red varieties, the best known are Duchess of Edinburgh, M. Chaband St. Mandrier, Alph. Karr, Mme. Brest, Mme. Vetry, Aline Sisley, Gen. De Tartas, Regulus, Sou. G. St. Pierre, Dr. Lisnard and Papa Gontier; we think that Duchess of Edinburgh and Papa Gontier might be profitably grown to the exclusion of the other red varieties mentioned.

Types in Roses exist as definitely as do facial expressions, color of hair, and other characteristics in the human races; let us select the best and most pronounced in the different years.

Type 1. The Duchess de Brabant section we would most certainly retain the recognized head of the class; also Mme. Jos. Schwartz, Chas. Rovolli and Riza du Parc, but Sou. Mme. Pernet, Marie d'Orleans, and Sou. Rosieriste, Rambeaux, Mme. F. Brassac, Duchess Magenta, L'Elegant, Marguerite Fenelon or Mme. Remond are almost identical with the type in color, while lacking good qualities found in the three named.

Type 2. Represented by Coquette de Lyon, and is followed by Perfection, Monplaisir, Mme. Devacourt, Sulphureaux, Mlle. Marie Arnaud and Mme. Cecil Berthod; Mr. Craig designated Coquette de Lyon as the yellow Hermosa, and if we retained that we should hardly miss the others.

Type 3. La Pactole, Narcisse, Exadolphe, Empress Marie of Russia, Mme. C. Kuster and Canari. Undoudtedly Mme. Kuster leads, producing larger buds, and of stronger constitution.

Type 4. Commences with the old Cels tea, and is followed by Aurora, Mme. Derroches, Mme. Damazian, La Sylphide, Mme. Angele Jacquier, White Tea, Mme. St. Joseph, Louise de la Rive Mme. Bravy and others. Louise de la Rive and Mme. Angele Jacquier would be almost unanimously selected to represent the type characterized by slender growth and much leafage.

Type 5. Abbe Rousseau, Alph. Mortleman, La Tulipe, Marie Ducher, Belle Maconnaise, Countess de Caserta, Eugene Meynadier, Marechal Bugeaud, Mme. Noirey, Pauline La Bonte. We would willingly discard all the above if we might retain Mme. Welche and Mme. Watteville, which combine all the best colors represented in the list, without the disagreeable touches of dull violet or purple which mar all the others in greater or less degree.

Type 6. This is notable, for it contains Jean Pernet, Perle de Lyon, Perle des Jardins, Edmond Gautier, Sunset, Miss Edith Gifford, and last, Elizabeth Grammont, but with even so regal a list, it must be admitted that Perle des Jardins and Sunset are the best varieties.

(To be concluded next month.)

FROM VARIOUS SOURCES.

The Purslane Worm. Farmers and gardeners frequently have occasion to rejoice in the increase of a certain class of insects, called parasites, that prey upon and destroy other insects which feed upon the vegetable kingdom, but they very rarely have reason to welcome vegetable eating insects. According to an article in Science, however, by Prof. Snow of Kansas, that State and others adjoining are invaded by a caterpillar that feeds upon the Purslane weed. There are few gardeners who have not had severe struggles to suppress Purslane. During the past season the Purslane Worm has invaded Kansas in large numbers, exciting a good deal of fear in those who are in the habit of regarding all worms as enemies of the tillers of the soil. They have been known previously in Colorado, New Mexico, Arizona and Western Texas, but had never before appeared in noticeable numbers in Kansas. Prof. Snow was unable to induce them to eat anything but Purslane. He first made their acquaintance in 1884, at Deming, New Mexico, where they were attracted by the lamps at the station hotel. It is questionable whether they will become acclimated in a moister and colder climate than their original habitat. If it will flourish here, and no doubt remains as to its habits, we wish they would send them on here as speedily as possible, for they will make the work of tilling our gardens much lighter. This insect has extended east very slowly, and it was not until the building of the Atchison, Topeka and Santa Fe Railroad resulted in the western extension of the Purslane that they gradually made their way eastward to Kansas. Its scientific name is *Copidryas Gloveri*, and it was described and named by A. R. Grote in 1868. It is just possible that it may feed upon the Grape-vine. We should want to be certain that it would eat no useful plant before welcoming its introduction.

Vines at Newport. Very few people fully appreciate how much the beautiful houses of Newport are indebted to the vines and creepers with which they are surrounded. But for these, some of the most attractive places would be barren in appearance if not positively ugly. Some are comparatively new varieties, introduced from foreign lands, while others are natives of the soil where they grow. Take, for instance, the Virginia creeper and the Wistaria, so abundant on every hand, how completely they change many a rough, uncouth fence or outbuilding into a thing of beauty, and add to the mansion itself artistic wealth of no small value. The common creeper, such as covers the debris of old castles, and makes them fresh and charming even while in ruins, and the Japanese Ivy, a recent importation, rich in leaf and color, everywhere appear. The combination of these climbers give a striking variety in shades of green and in forms of foliage, the Wistaria hanging in festoons, the Virginia creeper in sprays, and the Ivies, especially the Japanese, presenting the appearance of a wall, variegated as by a master's hand; then add the Trumpet Honeysuckle, with its extended arms, bearing beautiful flowers of yellow and gold, and we have a picture not easily surpassed. And so we have the Birthwort, or Dutchman's Pipe, with its broad leaf of dark green, and the Clematis, or Virgin's Bower, for training on posts, on the lawn, and in the flower garden, or on pillars along the veranda; and as different varieties bear flowers of many colors, there is little danger of dull uniformity.—Newport News.

Forcing Asparagus in Winter. Asparagus in midwinter brings a fancy price in the large markets. Strong roots of three or four years' growth that have never been cut yield the most vigorous heads with the least expenditure in artificial heat. Make a bed of stable manure and leaves three feet high at the back and nearly as much in front, and as soon as it shows a steady temperature of 80 degrees, cover the bed with soil, in which place the roots close together and cover with light, rich soil to the depth desired for the amount of white in the growth. To keep up a succession, make a fresh bed every three or four weeks. Such beds in a well-lighted place, where a temperature of 60 degrees to 70 degrees or more is maintained, will produce a rapid growth of tender, crisp Asparagus that will prove a paying novelty.—Farm and Home.

Apples True From Seed. A Wisconsin orchardist, Mr. Peffer, who has done a great deal of experimenting with raising Apple trees from seed, says: To grow the variety to have the same kind isolate it by tying a paper bag over a bunch of buds, and let them bloom inside of it. After blossoming remove the bag and that Apple will be of the same variety as the tree. Seeds saved in that way can be propagated further north, and probably a degree, and if the seed is again grown there you can go another degree north with it. I started in 1845 in this way, and some of my original trees are still standing. If you want to cross-grade, just before the flower bud opens, cut out the stamens and leave the pistils standing, and put something over them so that nothing can intrude on them until you can get to another variety. You can take the pollen from any variety you wish; you can get it by mail anywhere, and it will keep a number of days, and that can be introduced into that bag so as to fertilize that flower. Grow the seed promiscuously, you cannot tell what will come.—St. Paul Farmer.

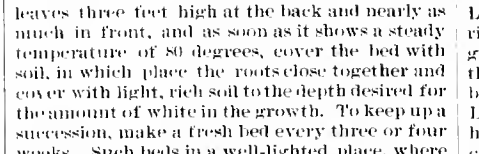


Fig. 2. A Nest of Transplanting Tubes.

Peach Culture North. The success of the Hale Brothers of Glastonbury, Conn., during the present year is very likely to give an impetus to Peach culture. During the present season their yield has been enormously large and of excellent quality, proving conclusively that this fruit can yet be grown where disease has in the past prevented. Their fifty or more acres has proved to be an unusually profitable investment, much better than could be expected in ordinary cases. A favorable condition has been that, as a rule, in the Peach growing States the crop has been lighter than usual. But plainly, if cultivation should be greatly enlarged the effect would be to over-supply the market and reduce the prices. Perhaps it is hardly to be expected that there will be a return to the time when Peaches lay and rotted upon the ground or even fed to hogs for want of a market. But a little larger supply so as to bring the fruit in reach of the poorer classes is desirable.—Exchange.

Fig. 1. Tin Tube for Transplanting.

New Method of Transplanting. For material go to a tinsmith and get the heaviest sheets of 14 x 20 tin. Oftentimes his stock may be such that he will sell at a low price. Cut these into pieces 10 inches by 4½ inches. Turn up the ends of each piece short and roll up and lock these together (no soldering necessary) to make the tube shown in figure 1. A number depending on the amount of transplanting should be made. Place the tubes in wooden trays on a wheelbarrow and go where the plants are. If they are Strawberries gather up the leaves of the young plants, slip the tube over them adjusting it so the crown is in the center. Now set one foot squarely on the tube and force it halfway into the soil, then pick up the tube and return it to the tray, continuing until you have a load of "potted plants." Convey to where they are to be set, having the soil here soft and mellow. Then you can scoop out the soil and set the tubes in place to half their depth almost as fast as you can crawl on hands and knees. The roots and soil in the tube stand in the new location just as they did in the old. To remove the tubes we found that to nearly fill the top of each with water, say twenty or thirty at a time, and then go back to the first one it lifted out easily. Transplanting thus done instead of checking growth really imparted new life. It works perfectly and rapidly. The size of tube given is especially for young Strawberries, Raspberries, and for Celery, Cabbage, Cauliflower, Lettuce and Tomatoes. By having the plant-bed rich you take enough of the rich soil along to give the plant quite a start. In vegetable plants those once transplanted by dibbling are the best, but during the past few months we have set Lettuce right from the seed bed to the greenhouse with success. From three to a dozen came up, but this was no detriment, for by setting the clumps six or eight inches apart the outer ones grew fast, and when they were pulled the others had a chance. Figure 2 shows a nest of tubes suitable for work on a wider scale. The larger ones of galvanized iron with a stout wire around the top, to prevent bruising when stepping on top of them. To take up a hill of Melons or Cucumbers or a little tree use a tube six inches to a foot across. With very light soil you may need a spade or shovel pushing it beneath the larger tube before lifting. The great point of the invention is the facility with which transplanting can be done without checking growth. The tubes are not frail like pots, nor as expensive (the cost ought not to exceed a cent each), and they are used with much less labor.—A. I. Root's (Medina, Ohio) Gleanings in Bee Culture.

Apple better than Orange Culture. A neighbor who has gone to Florida to raise Oranges recently called on us while visiting his old home. Seeing our Apple trees with their load of highly colored fruit he said: "I tell you, say what they may of the beauties of the Orange groves, the truth is the Orange tree at its best is never more beautiful than the Apple tree of New England. The Apple in bloom is far ahead of the Orange, and when bending to the ground with its load of ruby fruit it is ahead again." Again he said:

"Apple trees do not require the constant nursing and coddling that Orange trees must have to secure good crops. We have to grub the soil two or three times during the summer to keep down weeds, we have to sprinkle the foliage to kill insects, and we have to scrape and wash the trunk and twigs for the same object. We manure once or twice a year and then we have frosts to contend with, and our fruit goes a long way to find a market." And this is the story many Orange growers tell. Apple culture in New England promises quite as well to those who will learn the requisites to success as Orange growing in Florida or elsewhere.—New England Farmer.

Winter Orchard Pests. A. R. Whitney's remedy for mice, moles and rabbits consists of lime, copperas and glue. Fresh lime is slaked, and enough water is added to make it into moderately thick whitewash. Dissolve two pounds of glue in water and add a dissolved pound of copperas, and stir the whole together. This mixture is applied with a whitewash brush to the trunks of the trees. Prof. Maynard uses half a pound of Paris green to eight quarts of water; carbolic acid is used if danger of poisoning animals is feared.—Prairie Farmer.

A Plant at Work. *The leaves* change the crude sap, which comes up from the roots, and the gases entering directly from the air, into organic compounds like starch, sugar, oil, etc., that go to build up the structure of the plant. *The sap* from the roots enters the soft tissue of the leaf through the many fine branches of the frame work. *The gases* from the air enter through small openings in the surface of the leaf, and pass between the cells in all parts where the substance is loosely constructed. Each cell or microscopic sac of the leaf, which contains green matter, is a workshop where the crude materials are brought and in which the sunshine transmutes the elements into highly endowed compounds. *Starch*, for one thing, is formed, and this may pass to some other part of the plant, to be there stored up in large quantities, as in the grain of Corn or the underground stem of the Potato. Over the entire surface of the leaf is spread a layer of cells without green contents. This is a tough protective covering called the epidermis and may be easily peeled off from the other portion of the leaf. Through this epidermis at frequent intervals are small openings for the passage of air, which are known as the breathing pores. The reader can gain some idea of the smallness of the plant cells, when it is stated that sometimes the breathing pores number over 200,000 to the squre inch of surface.—*Prof. Halstead.*

Desirable Window Plants. *Fuchsias* bloom freely, and are as easily grown as Geraniums. They require a rich soil, and are a nuisance if not thrifty; well rotted turf, some old manure, and a little sand suits them. Stick in some old, rusty nails; the oxide of iron deepens the colors. They should have weak liquid manure once a week, when budding or in bloom. They do not need a high temperature, but plenty of light and air. Red Spiders trouble them in a hot and dry room. Wash both sides of the leaves with soapsuds, afterward showering with soft tepid water. F. Speciosa, Mrs. Marshall, Syringæflora, Lustre and Carl Halt are fine winter-bloomers. *Begonias* are mostly very free bloomers, suitable for pot culture. The glossy green leaves are beautiful; they bloom nearly all the time. Few plants reward good culture better; soil should be rich, fibrous loam, with some sand and bits of rotten wood from an old log or stump, if it can be obtained. *Abutilon or Flowering Maple* is a handsome parlor tree. It needs a sandy soil; ordinary garden soil loosened with sand is sufficient. If it does not bloom freely, the air of the room is too hot and close; water freely. *White Jasmines (grandiflora).* Nothing can be more lovely. The exquisite, subtle fragrance seems not of earth. Blooms from September until January; leaves are evergreen and glossy; needs a trellis; loves a rich soil *Mahernia odorata.* This is a gem; blooms only in winter, when it covers itself with graceful lemon-colored Lily-of-the-valley bells; one plant perfumes a room. Must not get dry, or have too much water, at once; needs repotting in the spring, and constant pinching through the summer for compact shape. *Linum flavum* blooms in winter; shrubby stock, smooth, shining leaves; bright lemon-colored flowers like medium sized Morning Glories. *Cuphea platycentra* has small, tubular flowers; scarlet with white tips; always in bloom, and so bonny, it ought to be called "Little Cheerful." *B. hyssopifolia* has flowers of a bright lilac, very profuse. *Nierembergia gracilis* can be grown from seed, does well in sun or shade, and blooms profusely. Set out in the garden in the spring, it literally covers itself with flowers that resemble those of Flax, exceept in color. Old plants winter well in the cellar, and young, self-sown ones of summer for winter blooming.—Farmer.

THE CULINARY DEPARTMENT.

Variety for the Table. A French cook of great celebrity boasted that he could prepare Potatoes in 200 different ways and Apples in 400.

Prune Souffle. One-half pound of Prunes, whites of six eggs, twelve tablespoonfuls of powdered sugar. Stone the Prunes and chop fine. Beat eggs to a stiff froth, stir in the sugar, whip in lightly the chopped Prunes. Bake in a quick oven five or ten minutes and serve immediately with cream.

Where are the Jars? Tomatoes will often spoil in glass jars, becoming thin and watery simply from the action of the light, and preserves thus lose much of their richness and flavor. Candied fruit should always be kept in the dark to preserve its rich color and flavor. Try keeping all fruit in a covered chest or trunk down cellar, if you have no enclosed cupboard there. —California Patron.

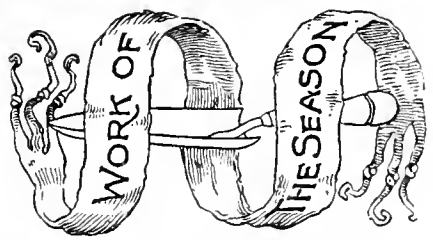
Cold Raspberry Pudding. The bottled or preserved fruit will answer admirably. Put a pint of Raspberries at the bottom of a pie dish, and pour over them a rich custard, made by beating up three eggs in a quarter of a pint of milk; add a little sugar, and whisk the custard until it becomes light and frothy. Put the pudding into the oven immediately, and bake until the custard is quite set. Let it get thoroughly cold; then sift fine sugar over the top and serve.

Apple Coddle. Pare and quarter tart Apples, add one lemon for every six Apples, and cook till a straw will pass through them. Make a syrup of half a pound of white sugar to each pound of Apples; put the Apples and Lemons, sliced into the syrup, and boil gently until the Apples look clear; then take them up carefully, so as not to break them, and add an ounce or more of gelatine to the syrup, and let it boil up. Then lay a slice of Lemon on each Apple, and strain the syrup over them.—Farmer's Review.

How Rice is Cooked in Japan. A recent traveler in Japan says: They do know how to cook Rice here, though, and for the benefit of consumers in the United States I investigated the matter. Only just enough cold water is poured on to prevent the Rice from burning to the pot, which has a tight fitting cover and is set on a moderate fire. The rice is steamed, rather than boiled, until it is nearly done, then the cover of the pot is taken off, the surplus steam and moisture are allowed to escape, and the rice turns out a mass of snow-white kernels, each separate from the other, and as much superior to the soggy mass we usually get in the United States as a fine mealy potato is to the water soaked article.

Delicately Fried Potatoes. These, remarks an exchange, are the exception not the rule, though it is just as easy (and far cheaper) to have crisp, brown fried Potatoes, as to have them fat-soaked and swimming in grease. Potatoes boiled with their skins on are better for warming over than pared ones. Those for breakfast should be taken out before quite done, and after removing the skins set away until the next morning. If boiled until fully done, they will be too mealy. Slice some of these potatoes less than half an inch; dredge them with a little flour, and fry in a pan containing a tablespoonful of hot drippings to each pint of potatoes; season them, put a cover on the pan, and when brown on one side, turn and brown on the other. Serve very hot on a hot dish.

How to Cook the Cranberry. The American Cranberry Growers' Association has approved and recommends the following recipes for cooking this fruit: No. 1.—1 quart berries, 1 pound granulated sugar, ½ pint of water. Cook ten minutes; shake the vessel; do not stir. No. 2.—1 quart berries, 1 pound granulated sugar, 1 pint water. Bring sugar and water to a boil; add the fruit and boil till clear—fifteen or twenty minutes. No. 3.—1 pound berries, 1 pint (scant) cold water, ½ pound granulated sugar. Boil together berries and water ten minutes; add sugar and boil five minutes longer. Gently stir, or shake, to prevent scorching. In all these recipes use berries of a bright medium color, as they are more delicate in flavor, jelly better and make more sauce than over-ripe dark ones.



HOUSE PLANTS.

Air. On all mild days treat the plants freely to outside air; in all but the coldest weather, at least some air should be admitted daily, if only after the morning sweeping. Much dryness in the air is unfavorable; a vessel of water on the back of the stove to evaporate will help this matter greatly.

Begonias of either the Rex or the flowering sorts are among the best of house plants. While they have no need of bright sunshine—yet a light place in other respects suits them. The Rex division likes a moist heat.

Camellias. Keep in a temperature near 50°, below rather than above; sponge off twice a week.

Cinerarias. Great care needs to be taken against their becoming pot-bound; growth must be constant.

Cyclamens, when done blooming, are usually dried off; a better course is to keep them growing until spring, then turn them into the border for the summer.

Daphnes like dampness and humidity with low heat.

Dutch Bulbs. As the earlier started ones pass out of bloom they should have their flower stalks cut out. Those to be saved for future use in the garden should be kept in a cool, light place until planting out time, in May. Late started ones for succession may be brought into heat for a month or two yet. These, as we earlier directed, should, after potting, be kept in a cellar or other dark, cool place, until they are well provided with roots. Before showing a good lot of roots on the outside of the ball of earth, it is really useless to bring them in, expecting good results. As for watering the growing plants in heat, it can hardly be overdone. Hyacinths and Crocuses, will grow and flower with their roots in water only—a wonderful thing, and indicative of the great love of these for wetness.

Fern Cases. Keep moderately wet; too much moisture in the soil tends to sour it. When watering is necessary, follow this act by opening the case to allow surplus moisture to readily escape. Air should often be admitted besides, but never while any dust of the room is in motion.

Frozen Plants. If any have been caught remove at once, and without handling the leaves if you can, to a temperature a little above the freezing point, say at 35°. A careful douse of each plant into cold water at this stage will also be helpful. Here many will recover with but slight damage, which in a higher heat would suffer much injury. If the desired temperature is lacking, let the room in which they are standing be heated gradually. Several lighted lamps placed on the floor will help well at the start. Avoid above all else running up a strong heat—keep it below 40° until the frost is all out, and even some longer.

Fuchsias placed in a cellar in the fall may be brought into heat; when they begin to show new leaves shift into new pots a size *smaller* than those previously occupied, shaking out most of the old earth. The soil should be fresh, light and well enriched with old dung.

Ivy and like plants with heavy leaves should be often washed, for the sake of health and looks.

Lemon Verbenas. See directions for Fuchsias.

Propagation. Where slips of any kind are large enough they may go into sand for rooting. Plants kept to supply cuttings do not need free shifting, as this tends to excite a quick and succulent growth that is not so favorable for making the best slips. Give the cutting box a light, even, sunny place.

Seed Sowing. For early plants of Mignonette, Petunia, Maurandia, Centaurea gymnocarpa, Golden Feather, and Ten-Week Stocks, the seeds should be sown at some time during this month.

LAWN AND FLOWER GARDEN.

Catalogues should be ordered from the nurseries, seed houses and implement dealers early, that ample time may be had in studying up one's needs. First come first served is the rule in filling orders by those who furnish stock, so there is no danger of making out orders too early. Better have them reach the nursery a month before spring, thus securing the stock early, than to get there so late that planting may be delayed dangerously. Seeds especially should be gotten around early in anticipation of early sowings.

Flower Beds. As no one ever thinks of planting the same beds alike year after year, so the sooner the coming season's plans are studied out the better for getting up the needed stock by planting time.

Hollyhocks. By sowing seed now in the window or under glass, and planting out in May, these plants will flower as annuals in September.

Hybrid Perpetual Roses earthed up a foot deep for the winter are sure to come through safely. If this was not done in the fall, coal ashes from the stove may yet be applied instead. When emptying them sprinkle with water to prevent their blowing away.

Mice are prone to girdle trees and shrubs when supplies of food are cut off. They work under the snow ordinarily, hence if the snow is kept packed about the trunks of trees and shrubs their opportunity is taken from them. Their food being scarce now, trapping them, using tempting bait, works well.

Pansiea for spring bloom may be sown now.

Plans. Little can be done in this department during January, save to plan and to prepare for the future. But as our success in gardening depends much upon the intelligence and foresight brought to bear upon our work, we should look upon this first month of the year, with the large amount of leisure for study and deliberation that it brings, as most important to the garden.

Pruning. If any part of a tree lacks in free growth, by pruning now the shoots will push with increased vigor next year. All scars above an inch across should be coated with paint or tar to keep out moisture.

Rabbits often make bad work gnawing the bark of young trees. Some bloody meat or liver rubbed on the trunks will prevent this. See remedies elsewhere.

Rock Work in some shape is desirable in nearly every place. This is a good season for gathering material with which to construct, so that when spring comes formation may be begun early. One or two kinds of stone usually look better in constructions of this kind than more would, the idea being to make it appear as if the stone was natural to the place. In the absence of stone fair substitutes may be had in odd shaped furnace clinkers and distorted burned bricks from kilns.

Rustic Work may now be made. Cedar is a favorite and easily worked wood for this purpose. Now that the swamps are closed it is readily procured. Laurel wood, and especially its roots, is another favorite material; but many other kinds that will work up well may be used. With a little ingenuity rustic tables seats, arbors, vases, etc., may be made to be beautiful and not costly.

Snow drifts so high where young trees are standing as to reach above where the branches leave the trunks are liable to cause the limbs to break, when later the snow settles away. A little shoveling will prevent this. Snow that has accumulated in the tops of evergreens or shrubs to be shaken out when it is light and soft.

PLANT CULTURE UNDER GLASS.

Amaryllis. Repot those showing signs of growth, watering very little at first, gradually increasing.

Azaleas coming into bloom need plenty of water. A collection may be had in flower over a much longer season, if different temperatures are at command, by bringing some into high heat by degrees for early, keeping others cooler, some quite cool.

Begonia Rex may be propagated now from leaves. Turn well matured ones of these bottom side up, and with a sharp knife cut the main ribs here and there, and just below dividing points, at about nine places. Place these on sand, right side up, in a heat of 68° with a little sand on top of the leaf to weight it down. The air should be moist. We have flung the leaves under bedded Rose bushes, grown for buds, and without further care have found them to root well.

Broken glass must have immediate attention. In our greenhouse we keep "life preservers" made in several sizes on hand to close up any breaks until they can be repaired. These consist of pieces of board a trifle larger than one, two or more panes of glass respectively, and which are used to lay over any breaks. A screw-eye is put into one side near the center of each board, and to this is attached a cord supporting a brick for keeping the board in place over the opening. These serve their purpose well.

Bulbs like Gladiolus, Tuberose and the like should be looked over at this season to see they are in good order. Gladiolus, Cannas and Dahlias are often kept under the greenhouse stages; see that no moisture comes to them to induce growth now. Tuberoses and others should be cleaned up, and have the offsets removed.

Flowering Begonias that have gone out of bloom should be pruned somewhat and kept rather dry. With signs of new growth repot. Avoid over-watering.

Fuchsias should soon be struck for nice spring plants. Once in pots they are impatient of cramped root room; let them not want water or light. Plants struck after this month should not have their tops pinched off, but should be grown naturally and quick.

Geraniums. Fall propagated ones will be putting on new signs of vigor now; see that they are not in the way of being crowded with the first increase of growth by standing too close. Repot to produce a good growth for spring. Geraniums of the tricolor section, being less robust than the common sorts, need a little extra attention. They delight in a warm place, say 55°, and much light—shelves near the glass in a warm house, suiting.

Orchids at rest should have a complete rest, with not a drop more of water than is absolutely needed to prevent the buds shriveling. Better if they must suffer that it be from too little rather than too much moisture. Cattleyas, Oncidiums, and others with large fleshy bulbs need even less water than the Vandas, Saccolabiums, Aerides and those of a similar style of growth. When watering is really necessary, do it early in the day and so carefully that the tender foliage will not become splashed over. The temperature for Orchids should be very regular as a general thing, but during excessively cold spells it would be better to allow the thermometer to drop a few degrees below the average than to fire strong in order to reach its regular height.

Pelargoniums. The beauty of these attractive flowers, will depend upon free growth now. The plants like rather a warm dry place, plenty of room, air and sunlight.

Peperomias. Propagate by division or else by to serting the leaf stalks into sand, to have the leaf lying close down to the same.

Petunias. Directions for Geraniums will apply.

Roses. The chief requirements of the ever blooming class now is a uniform temperature of from 55° to 60° by night, with 15° or 20° higher by day; syringing twice daily; a little air on all suitable days, and if the soil shows signs of exhaustion, liquid manuring once a week. The plants should be gone over at intervals and have all blind shoots as well as unduly straggling ones removed. If in cutting Roses these are taken off with stems running back to the second eye from the next larger branch, little other pruning will be needed. Hybrid Perpetuals now under way must have an abundance of water and plenty of air. A high temperature is not needed.

Seed Sowing. See under The House Plants.

Spring plants should be propagated according to their habits; those flowering only after considerable growth has been made, first, while quick bloomers may have this deferred. Favor kinds of which stock is scarce for hurrying up the growth of cuttings.

Ventilate freely in bright and mild weather to keep the atmosphere sweet and wholesome to the plants.

FRUIT GARDEN AND ORCHARD.

Catalogues. See under Lawn and Flower Garden.

Currants may be pruned by shortening the last season's growth, and trimming to form open heads.

Cuttings. See to it that Grape or Currant cuttings made in the fall have the protection they need now; an inch or two in thickness of straw will answer.

Gooseberries. Directions for Currants will apply.

Insects. Very few are visible at this season, and yet a sharp eye run over the branches may detect the rings of tent caterpillar eggs and also cocns insects when present. Wherever found remove them; each one of the former destroyed is equivalent to lessening the caterpillars of next season by three or four hundred.

Labels on trees, if left as they come from the nursery, will by their wires as the branches enlarge, in time, cause strangulation. Serious damage is often done to trees in this way. On mild days go over the trees and remove any that are liable to do this. For permanent labels, use pine, making them heavy, and painting, or else use zinc and in either case, copper wire about size No. 16 for fastening to the trees, making the loops so large that in years the growth will not fill them.

Mice and Rabbits. See under other departments.

Shelter Belts. The winter season is a good time to consider the effects of these on the orchard.

Tree pruning may be done in mild weather. More harm comes from over-pruning than not pruning enough. Weak and imperfect shoots should come out, as also such as cross each other in close conjunction. Weak or stunted trees may often be helped by a severe cutting back. Aim in pruning to open the head, that air and sun can enter.

Tree trunks may be scraped of loose bark, and if infested with moss or scale be painted with a mixture of lime, soot and clay. Work the brush vigorously that the liquid may get into every crevice. Some fruit growers use linseed oil as a bark wash for insects.

Winter Covering. If this has been displaced, reapply. Some dirt or moist coal ashes on the coat will serve to keep it down.

VEGETABLE GARDEN.

At the South early vegetables may be sown from January to April. Vegetables, like Flowers, may be classed as hardy and tender, the former including Peas, Parsnips, Parsley, Onion, Leek, Lettuce, Cabbage, Cauliflower, Cress, Spinach, Beets, etc., may in any section be sown as early as the condition of the soil will allow. Tender kinds, such as Beans, Tomatoes, Cucumbers and Melons, can only be sown with safety anywhere at Corn-planting time.

Cabbage plants in frames need an abundance of air whenever the temperature is to the thawing point and above; below this they need not be uncovered for days.

Hot-Beds. For these horse manure should be accumulated in a dry place, but not piled so deep as to induce free heating before it is needed. A few boards or rails laid up slanting where the manure is deposited to prevent close settling will aid in this.

Lettuce in frames. See on Cabbage plants.

Manure. Plenty of manure with tillage are almost the only secrets of raising large crops. In cold weather and with frozen ground manure hauling may be done with greater ease to teams than at any other time. Manure should not, however, be spread at this season, but so distributed in heaps as to be quickly available when needed. The piles should be in a compact rather than a loose scattered form, to prevent waste by the washing out of the strength before the earth is thawed to receive it.

Mice are often troublesome in frames, cold pits, root cellars and the like, now that their food is scarce. Fix up some "pills" for them, by soaking Peas in water until they swell, then roll in arsenic and bury just below the surface in some light earth. They will take these before plants or vegetables, and it is better that they should.

Straw mats will be needed where there are sash beds. A good size is to make them the width of a sash and a half, and of a length to hang down half a foot at top and bottom of sash over edges of bed.

Tools. Put in order. New ones that are needed may be made or ordered in the winter's leisure.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus. Observe directions for Rhubarb.

Graperies that are now being started up should have not above 55° of heat at the outset, and be well syringed twice a day, to assist the breaking of the buds. As the young growth appears, sufficient air must be admitted to prevent the growth from being weak and the foliage thin. Advantage should be taken of mild days to air the structure freely.

Mushrooms. The nearer the temperature of bearing beds can be kept to 60° the better. Steady temperature will greatly prolong the bearing. Manure should be saved up for new beds.

Rhubarb under glass must be kept well watered.

Snow on Glass. On warm forcing houses it usually soon melts, but where the temperature inside is kept rather low, it may need removing. A snow scraper three feet long is one of the safest articles for removing soft snow. If a shovel must be used, let it be of sufficient width to reach over at least two bars. Cold pits that are frozen up should not have the snow removed from the glass, but the frames that are unfrozen inside must be kept clear of snow.

Strawberries in forcing must not be allowed to set too much fruit or this will be small; a moderate number of large berries are much more satisfactory than many small ones. When enough have set clip off the remaining flowers, and then later count on removing the smallest berries also. Apply the syringe to keep down Red Spider. Avoid drouth and over watering at the root.

POINTS ABOUT POULTRY.

Nonsense is what the American Farmer calls the talk of pullets being too fat to lay. With old hens it may be possible.

It is better not to chop up the Cabbage or Turnips for fowls; the exercise derived from picking them to pieces is beneficial. A good way to serve Cabbage heads is to invert them over an upright pointed stick 18 inches high.

Some of the Nice Points. It should be noted that fowls that are confined in yards and kept warm in winter will give better results the entire year than when they are allowed to roam at will. True, hens that have free range will sometimes lay more eggs in summer than will those that are confined, but the hens that are properly cared for during the cold season will lay at a time when the highest prices for eggs are usually obtained.

Save the Quills. There is now a market for all the quills that are plucked from the Turkey. Until recently the demand for Turkey quills has been confined to the tail feathers, and those growing upon the second and third joints of the wing, and having full plumage on both sides of the quill. These have been in demand for the manufacture of feather dusters. The other large quills were considered worthless, and thrown away. The manufacture of the new elastic bone Featherbone now creates a demand for all the large quills from the Turkey, and from the wing of the Goose, so that our readers are perfectly safe in saving them, as there will be a continuous market for them.

Catches Them With a Crook. When I wish to capture a fowl I take my crook and a sack, throw down a bit of feed, and while they are scrambling over it I quietly pull in and sack the one I want. The thing is done before the flock realize that I have made a motion, and the bird is so astonished that it rarely utters a sound. For culling out or separating a flock of poultry it is almost indispensable. Get the flock in a small yard or shed, and instead of plunging or diving among them and frightening them into fits, move quietly about and hook out those you want. My crook is five and one-half feet long and made of wire nearly one-fourth of an inch thick. Corr. Philadelphia News.

Profit or Loss in Selling. Fanny Field advises very sensibly in the Farmer that instead of selling eggs to the village grocer for about two-thirds the city price, and taking your pay in "trade," send them direct to the city yourself. You don't have enough to make it pay? Let's see about that. How many do you have? Fifteen, ten, or even six dozen a week? Well, there is your neighbor "just over the way" who has as many more, and two or three other neighbors who live a little farther down the road, each have as many more; and the neighbors who live up the road sell anywhere from 4 to 15 dozen each week. Now, what on earth is to prevent all the farmers in your neighborhood from "clubbing together" and shipping the eggs straight to the city commission house? Ship every week; send only clean, fresh eggs, and you will get the top market price in cash, which, after paying expenses, will be considerably more than your grocer pays.

INQUIRIES AND REPLIES

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

540. **Nitrate of Soda on Early Truck.** I would like to know how this should be used on truck garden crops? Also the value of kainit and of sulphate of ammonia in the garden. I cannot make enough stable manure, so must look elsewhere.—A. C., *Martinsburg, W. Va.*

541. **Hydrant water in Rose forcing.** Is such water in any sense injurious as compared with warmer water for syringing Roses with a hose and nozzle in winter?—A. H. S., *East Weymouth, Mass.*

542. **Black Walnut Culture.**—The writer would be greatly obliged for any points on the subject, such as the best soil, mode of planting, distance, culture and kinds. I have noticed the Walnut is darker here than West; is climate the cause?—R. T. CARTER, *Denton, Md.*

543. **Croton Carrieri.** Can any reader give me a description of this sort?—W. X. Y., *Essex Co., N. J.*

544. **Triumph Aster.**—Can seed of this variety, described in December, be obtained in this country?—U. J.

545. **Hardy Dianthus.** I have seen the most beautiful double clove-scented Pink in a garden, the flowers of which were as fine as a Carnation, and the plant looked like a Carnation, but was said to be perfectly hardy. What is it and how grown?—L. D., *Erie Co., N. Y.*

546. **Sweet Lavender.** What plant is it that is known by this name and how is it grown?—IGNORANCE.

547. **Arbor Vitæ Hedge.** Desiring to start an Arbor Vitæ Hedge in the Spring, would you be so kind as to give me some advice as to size of trees best to plant, kinds, distances, etc.?—H. M., *Cumberland Co., Pa.*

548. **"Shortening in" Peach Culture.** I am thinking of planting in Northern Virginia a fruit farm, principally Peach trees, and I would like to know if the method known as the "shortening in system," and practiced by the French and advised by Downing, is practiced in this country, and with what success? Does it tend to prolong the life of the tree, and produce a moderate crop of fine fruit annually?—R. T. R., *Elyria, Ohio.*

549. **Green Manuring for Fruit.** I desire to know whether sufficient fertility can be imparted to land by green manuring to fit it for fruit culture apart from the use of stable manure?

550. **Salt for Quince Trees.** Is salt of value for these trees, and if so, what quantity should be applied?

551. **Manure for Small Fruits.** Can stable manure be supplemented by other kinds with advantage, or is the former alone better?—J. W., *Cherry Co., N. Y.*

552. **Wintering Pansies.** I now have quite large Pansies, and the sash is still on; shall I remove it or not? Would like to have them bloom by Easter.—A SUBSCRIBER, *Morrisville, Pa.*

553. **Apple Geranium Culture.** Is there any special art in the cultivation of the Apple Geranium? I have one I think a great deal of, but it grows in the poorest kind of a way.—SUBSCRIBER.

554. **Clematis Failing.** Can you tell me what causes my Clematis to droop and die so suddenly? And if so, give a remedy. I have lost many and am discouraged.

555. **Camellia Management.** Should the snake-like root in Camellias be trimmed out? Mine do not bloom well.—MRS. H. L. D.

556. **Palms.** What treatment, kind of soil, amount of water, etc., and where can I procure seed?

557. **Mildew on Roses.** Please give best remedy for mildew on Roses. How is sulphur applied to hot-water pipes?—J. E. B.

558. **Pine Needles as Winter Covering.** Are they suitable for use in protecting bulb beds?

559. **Cherry Stocks.** Are the Mazzard stocks the roots of the old Morello Cherry? Give us the name of a reliable firm that furnishes Cherry and Plum Stocks.—MRS. A. E. DAVENPORT, *Washington Territory.*

560. **Pears that ripen well on the Tree.** Which ones do this the best?

561. **Material for Protection.** Earth is recommended for covering Grapes and Raspberry plants, etc. Will not manure do as well?—W. W. K., *Toronto, Ont.*

562. **Canning Machinery, Etc.** Can you give us name of any manufacturer of Canning Machinery? Also, can you direct us to any parties or any books that will give information on the subject?—GEO. E. HICKS.

563. **Chrysanthemums Mixing.** Does this occur through having the different varieties together while in bloom or at any time?—T. R., *Great Bend, Kansas.*

564. **Works on Plant Culture.** Can you name some books, etc., treating on propagation and culture of plants under glass?—M. A. P., *New Haven, Conn.*

565. **Works on Grapes and other Fruits.** Which do you consider are the best works on Grape culture; also, on general fruits, with price?—U. P., *Columbus, Ga.*

566. **Applying Ashes.** If ashes in contact with animal manures drive off valuable gases, how soon after manure is applied to land may the former be applied without loss? What gases are driven off?

567. **Dissolving Bones for making Fertilizers.** I have known a successful farmer years ago to use large quantities of bones, and vitriol to dissolve them, for fertilizers. Can you tell how?—F. H., *Onchama, Mich.*

568. **Defective Hot-Water Apparatus.** A hot-water heater and pipes recently put into my greenhouse fails to work. When I get up heat, the water in the tank, which is above the return pipe near the boiler, surges up and down causing it to overflow and filling the house with steam. If any one could suggest what the defect is, I would feel greatly obliged. There is a rise of one inch in six feet in the pipe. No matter how hot the fire may be the pipes at the further end are never warm.—NEW BEGINNER, *Rahway, N. J.*

569. **Montbretia Pottsi not Blooming.** This bulb has not dowered as well with me as I have seen it do by others. The trouble?—C. C. E., *Champagne Co., Ill.*

570. **Propagating Large-leaved Begonias.** Will any reader tell me how best to proceed in propagating these?—E. G., *Montgomery Co., Ohio.*

571. **Sprinkling the Leaves of Plants.** We are told that little trickles of water are worse than no water; give a good-soaking or let it alone. But then it is added gentle sprinkling over the leaves is beneficial. But a high scientific authority and a great gardener, Mr. Matthew Williams, of England, tells us that we cannot do anything worse than this in hot, dry weather; that by so doing we open the pores of the leaves, and make them evaporate the moisture from their tissues and from the ground at a hundred horse-power. It would be interesting to have this question ventilated.—D. K.

572. **Pruning the Quince Tree.** Will you kindly tell how to prune this tree? I have pruned my tree annually, but for some reason fruit is scarce, although there are usually dowers—MRS. M. H., *Atlantic City, N. J.*

573. **Fertilizers for Strawberry.** Will it pay to give a last spring's bed any fertilizers? 400 pounds of guano did not seem to count.—W. R. R., *Jackson, Ca., IV.*

574. **Fruit for Small Plat.** Kindly name two or three Pears, an Apple and some Plum trees for a small garden for home use.—S. R., *Orange Co., N. Y.*

575. **Pine for Shelter Belt.** In planting a shelter belt of White Pine (*Pinus Strobus,*) how far apart should the trees stand? Should there be a double row? What is the best time to plant, and how far to be cut back?

576. **Cotton Cloth for Hot-beds.** What is the best material and how should it be prepared?—A. F., *Dorchester Co., Delaware.*

577. **Bouvardias after Flowering.** How should the plants be treated after their first strong crop of bloom? Do they require a rest?—C. S. E., *Onondaga Co., N. Y.*

REPLIES TO INQUIRIES.

445. **Double White Feverfew.** They are not hardy enough to live outside and should be taken up, potted, and placed in the lightest part of a cool cellar. Water should be given very sparingly, and injury from damp guarded against. Early in February they may be removed to a light, sunny window and started into growth. As soon as the shoots become three or four inches in length they can be taken off and rooted. These young plants will flower nicely all summer, while the old wintered-over plants would in all probability prove a perfect failure as far as flowers are concerned.—C. E. P.

459. **Protection from Rabbits.** For two winters I have found the following a perfect safeguard against Rabbits: 1 pound of Frazer's axle grease to 2 pounds of lard or linseed oil; heat and mix thoroughly. I applied it by means of an old mitten, warm; easily "doped" 1,000 trees per day. Cost merely nominal; not necessary that all the bark be greased. The smell goes a good way.—C. B. ELLIOTT, *Barry Co., Mo.*

508. **Range of Quinces.** The Quince does well generally where the extremes of cold do not reach much beyond 10 or 15 degrees below zero. The tree is native to the south of Europe and Germany, but succeeds generally in temperate climates. In Scotland the fruit seldom ripens, except on a wall.

472. **Hot-bed in October.** I used to run hot-beds all winter long, especially for Asparagus forcing, but such a job! Asparagus put in about the middle of October will give "grass" for Thanksgiving, but it doesn't pay. Now that greenhouses can be put up and run so cheaply, it doesn't pay to run hot-beds in winter. But even now I run small hot-beds for Radishes.—W. FALCONER.

496. **Peaches from Seed.** The stones should be in the ground now. We generally "bed" the stones in earth as soon as we can get them in fall, then in spring sow in rows 3 or 4 inches deep.

492. **Pests on the Mushroom Bed.** If mice have access to the bed you can't prevent them eating the Mushrooms. Keep them out. Surely flies do not soil your Mushrooms in September or October? I know they are very troublesome towards spring; they are bred in immense quantities in the manure. We cannot get rid of them without thoroughly cleaning out the house. We can do this perfectly before starting any of our beds, also partially any time during the Mushroom season when the beds are earthed over, by shutting up the house quite close and blowing pyrethrum powder into the air. Throwing the powder about is no good; it must be suspended in the atmosphere so that the insects can breath it in order to be effectual. Have the manure ready for building into the bed before you bring it into the house. Woodlice can be caught in little pockets of dry grass. Maggots appear in our Mushrooms about the end of April. I then discontinue the beds till fall.—W. FALCONER.

509. **Sweet Potato Culture.** The Sweet Potato requires a rich, light, warm soil. We have often difficulty, in this district, in saving the tubers sound enough until spring to start for sprouting to produce young plants. They can be kept by packing in barrels in dry sand and keeping them in a warm room. About New York we begin to start the Potatoes in hot-beds or forcing-pits about the middle of April, laying them thickly together on a two-inch layer of sand and leaf mold composted together, or sand alone will suit if leaf mold cannot be had. As soon as the buds or eyes show signs of starting, cover the roots completely over to the thickness of an inch with the same material. Treat as for other tender plants in the hot-bed or forcing-pit, and the sprouts or slips will be ready for planting out by the first of June. In sections of the country where Sweet Potatoes are grown even to a small extent there are generally men who make a business of growing the plants, which are often to be bought as low as $1 per 1,000. The plants are set out in rows three or four feet distant, and about two feet apart in the rows, using a good shovelful of well-rotted manure, mixed in, for each hill. They are always planted in light, sandy soil, heavy soils being entirely uncongenial to the nature of the root. As they advance in growth the rows are hilled up with the plow in the same manner as ordinary Potatoes, care being taken, however, to prevent the vines, as they hang over, from rooting in the sand. This is done by running along the vines, occasionally under them, with the hand to break the young roots and keep them from striking into the soil. In the Northern States, Sweet Potatoes must always be used previous to December, unless they can be kept in a warm place. In the Southern States they are kept in pits in the open ground in much the same way as we keep ordinary Potatoes at the North. Probably the best temperature at which Sweet Potatoes can be kept in winter is sixty degrees. The following are the sorts mostly grown: *Nansemond.*—This is the earliest sort; tubers large, from three to four inches in diameter at the thickest part, tapering to each end, and from five to eight inches long; flesh dry, sweet and well flavored. *Red Skinned.*—This variety is claimed to be hardier than the preceding, but it is doubtful if this is the case. It is a long, slender variety, mostly grown in private gardens, and is thought to be of a richer flavor than the yellow or white sorts. *Yellow Skinned.*—This sort is mainly cultivated in the Southern States, where it attains nearly the weight of the Nansemond; it requires a longer season than that variety, and is not so suitable for the North. It is of excellent flavor and quite free from stringiness.—Gardening for Profit.

530. **To Build a Brick Flue.** To heat properly a greenhouse of the dimensions stated (9 x 60), in a moderately exposed situation, the following plan will be found sufficient:—The flue should run all around the house, that is start along under one bench, cross the end and return under the other bench to the place of beginning, where it enters the chimney, which is built over the furnace pit. It should have a gradual rise in this length of about two (2) feet to secure perfect draft. The inside measure of flue should be about 10 x 12 inches, and should be raised from the ground by means of bricks, as it not only exposes more heating surface but keeps the flue always dry and makes it draw better. The first 25 feet of flue, after leaving the furnace, should be of brick, from which point 8 inch cement drain pipe should be used, which is not only cheaper and more easily constructed, but radiates the heat more rapidly than brick. The bars of the grate should be two feet in length, making a width of 12 to 15 inches. After setting the bars by resting them on an iron plate set into the brick work at front and back, the sides of the furnace should be built with fire-brick and fire clay to the height of 15 or 18 inches, from which point either an arch is turned over to cover the furnace or iron bars laid across to support the upper tier of bricks, on which the chimney is built. The top of inside of furnace should be at least 15 inches from the grate bars. The neck of the furnace should rise at quite a sharp angle for about two feet until it runs into the flue, and for this reason it is best to place the furnace deep enough to admit of this rise, without getting much above the level of the greenhouse floor; precaution of course should be taken in regard to draining if there is danger of water in winter. The building of the chimney over the furnace pit always insures a perfect draft, which is the great difficulty with long flues which terminate at the opposite end from the furnace. Care should be taken that no woodwork come in contact with the flue at any point, as the heat given out dries the wood to such an extent that it would ignite readily and the contents of the house likely to be ruined, if not consumed. In describing the furnace I should have stated the furnace doors, which should be about one foot square, may be so constructed as to either open from the inside of the greenhouse, or what is better, from the end, over which is built a small shed which not only protects it at this point but serves as a place for storing coal, flower pots, potting soil, etc.—G. H. M., *Norwich, N. Y.*

534. **Twig Blight.** We have given your query this heading, for the difficulty is undoubtedly twig blight. It is a form of disability that has received much careful study. It is not yet definitely known whether the fungi, always found accompanying the disease, is the cause or an accompaniment of the difficulty. No medication of the trees has yet proved effectual in warding off or in curing the disease. The trouble lies in the sap, hence medication seems to be unable to reach the difficulty. Reasonable success has followed the cutting back of the affected portions of the limbs at the first indication of blight, considerably below the discoloration, and burning the several portions. If left, the whole sap of the tree sometimes soon becomes vitiated.

535. **Draining the Orchard.** The only consistent course is to drain previous to planting, and as draining can be done earlier than the ground would be fit to plant, we would advise that it be got at very early in the spring. It is a pity this important work was not performed in the recent fall months. Generally speaking it may be said that while some varieties of fruit trees are better adapted to moist soils than others, there are none which will not do better in a moist hollow when it is tile drained.

536. **Wormy Apples.** I don't understand how an Apple that is wormy and unsound can be "otherwise good." However I will gladly give my own experience in preventing insect attacks, and am sure if "G. C." will follow it up thoroughly he will have no further trouble. The insect is undoubtedly the codling moth (*Carpocapsa pomonella*), to kill which effectually the work must be begun as soon as the blossoms fall off, for the moth lays her eggs in the blossom end of the Apple about that time, and the tiny insects soon hatch, and unless destroyed at once eat their way into the Apple; after which no remedy will reach them. The only poison which will meet the case is some arsenical preparation (Paris Green or London Purple), and this must be applied thoroughly in a fine mist like-spray. The first application should be made with blossom falling and again in about three or four weeks. In a bad season for insects it should be applied a third time. Other things favoring this will ensure you a good crop of Apples. The apparatus used in my work was the "Little Giant" Atomizer, manufactured by A. H. Nixon, of Dayton, Ohio, and I can warmly recommend this machine to all orchardists. I used about one pound of London Purple to 60 gallons of water, and think one pound to 75 gallons would be strong enough. In every case which has come under my observation where this treatment was followed out the result was more than satisfactory.—J. O. A., *Montgomery Co., Ohio.*

548. **Peach Culture: Shortening in** The "Shortening in" process is being largely practiced in Peach growing sections, making trees more stocky and better. Our rule is to cut back one-half to two-thirds of the past season's growth in early spring following, and if limbs or branches are too thick thin them out by cutting back close to body or large limbs of trees. In conversation with many Virginia and North Carolina growers all advocate growing all kinds of fruit trees, especially Apples with short bodies and low heads, as it prevents sun scald to the bodies. Yours is a sample of a large number of similar letters. Examine well the locality where you expect to locate, and inform yourself as to success of this and that kind of fruit in that locality. Hill tops and western slopes are, as a rule, safer in that section than valleys or eastern slopes.—A. M. P.

565. **Works on Grapes and Other Fruits.** Fuller's Grape Culturist (price $1.50) and Hussman's American Grape-Growing and Wine-Making (price $1.50), are the leading standard works on the subject. Both are good. The latter is the work of a man of the widest experience perhaps. The best treatise on fruit culture for your part of the country is found in White's Gardening for the South (price $2.00), a book treating also on vegetable gardening.

509. **Sweet Potato Culture.** The Sweet Potato requires a rich, light, warm soil, and in this vicinity is generally planted about the first of June in rows or ridges four feet apart, the plants being one foot apart in the row. Or they can be planted in hills four feet apart, placing three plants in a hill. After growth commences all the cultivation that they require will consist in keeping them well cultivated. And the vines should be moved occasionally in order to prevent them rooting at the joints. The sprouts or slips as the plants are termed can be usually procured at any principal seed store, or if they are wanted in quantity one can readily raise them at home, by starting the tubers in a hot-bed about the middle of April. In order to start the tubers place them in shallow boxes, thickly together on two or three inches of sand, and cover as soon as they show indications of starting. The slips or sprouts should be carefully broken as soon as they are four our five inches in length, and if well rooted and the weather is suitable planted out, or else they can be planted in rows an inch apart in similar boxes filled with turfy loam and sand in equal parts until wanted. The tubers and slips will require the treatment usually required by hot-bed plants. A few tubers will produce a quantity of plants. The Nansemond is a very reliable variety.—CHAS. E. PARNELL.

512. **Pears for Market.** Bartlett, Beurre Anjou, Howell, Mount Vernon, Seckel, Sheldon, Lawrence, Kieffer, Belle Lucrative, Beurre Bosc, Louise Bonne de Jersey and Duchesse de Angouleme, the latter to be grown as a dwarf.—C. E. P.

514. **Forcing Bulbs Early.** Hyacinths, Tulips and all other bulbs intended for early blooming should be potted as early in September as possible, and then treated precisely as those intended for later bloom until fire is started in the houses, when they should be brought inside and placed underneath the stage until indications of advancing growth are noticed, when they should be removed to a light situation (or else placed as close to the glass as possible) where an average temperature of 45 is maintained. Water freely and give air whenever the opportunity offers. For this purpose the early blooming varieties of Hyacinths, Tulips, etc., should be used.—C.E. P.

515. **Grubs in Cyclamens.** This is a pest to which these beautiful pets are becoming very subject. Your best course would have been to have washed the corms or tubers perfectly clean before planting them out in the border for the summer, and then repeat the operation before potting them in the fall. This would have banished them for the season. They should also have been given clean pots and drainage, as well as perfectly clean compost.—C. E. P.

516. **Cyclamen Treatment.** In order to secure a succession of bloom for a long period, the stock should be divided into several portions. That intended for the earliest bloom should be given a temperature of 55 degrees from the time fire is started until all the flowers are expanded. The remainder of the stock should be kept as cool as possible, and from them a succession of plants may be introduced into heat from time to time as necessity or occasion may require. Cyclamens flower best when given a light sunny situation, and a temperature of from 50 to 55 degrees. Don't crowd the plants, and do not let them suffer for water at any time while growing.—C. E. P.

511. **Double Glazing.** After many repeated trials this has been abandoned as being very unsatisfactory. Not only do the two thicknesses of glass retard the light and prevent the rapid melting of frost and snow, but the dust and dirt that will eventually gather between the glass offers a serious objection to sun and light at a period when every ray of light is needed.—C.E.P.

520. **Colored Plates of Fruit.** You can procure these at a very reasonable rate of the Stecher Lithographing Co., Rochester, N. Y.

522. **Raspberry, Crimson Beauty.** I cannot say as to its value as a market variety, but for amateur cultivation at home it is a very desirable variety.—C. E. P.

523. **Raspberries for Canada.** Yes, they should stand if protected by being laid down, and covered with earth. Don't cover too early; uncover gradually in the Spring.—C. E. P.

524. **Sources of Vegetable Seed.** Asparagus is mostly grown in New Jersey and Long Island. Beets in New York, Pennsylvania and Connecticut. Bush Beans and Peas in Canada and New York State on the immediate like of Lake Ontario. Pole Beans in Connecticut, New Jersey and Pennsylvania. Cabbage in Long Island, Pennsylvania and New Jersey. Cauliflower has always been imported, but recent experiments show that it can be successfully grown on Long Island. Celery in New York, New Jersey and Pennsylvania. Cucumbers in Connecticut, New Jersey and Michigan. Carrots in New York, Massachusetts and Connecticut. Egg Plant in New Jersey and Pennsylvania. Leek and Lettuce in New York, Michigan and Connecticut. Melons in New Jersey and Pennsylvania. Onions in Connecticut, Massachusetts, Michigan, Pennsylvania and New Jersey. Parsnip in New York and Connecticut. Turnip in Pennsylvania, Connecticut and Michigan. Tomato and Pepper in New Jersey, Michigan and Connecticut.

528. **Use of Pine Spines.** They are of no value to mix with leaves for compost, and I would not advise any one to use them for mulching. They should be raked off the grass, and if you have a low spot in the hog pen or cow yard, where water stands, fill it up with them; and allow them to remain until thoroughly rotted. Don't burn them off on the grass.—C. E. P.

539. **Rhubarb Culture.** The cultivation of this vegetable is of the simplest kind. It prefers a deep sandy loam, and if it can be given a sheltered situation the crop will be much earlier, and consequently more profitable. The ground should be plowed as early in the sprlug as possible to a depth of ten or twelve inches, harrowed thoroughly, and then marked out in rows four feet apart each way. At each intersection three or four shovelsful of well decayed manure is placed and well mixed with the soil, and here the plant is placed. After planting they must be well cultivated at all times. After the frost has destroyed the foliage each hill should be given three or four shovelsful of well decayed manure. This treatment should be given yearly until the plants become exhausted or too large, when a new plantation should be made. Propagation is effected by divison of the old roots, each eye or bud when broken apart with a root attached forming a plant.—C. E. P.

540. **Nitrate of Soda on Early Truck.** As a rule, the best way to use Nitrate of Soda is to sow it hand cast at the rate of six bushels per acre, or 500 lbs., over the whole surface of the land. An average handful of Nitrate of Soda weighs 4 ozs. There are 280 handfuls in a bushel of 70 lbs. In sowing, every time the right foot strikes the ground you scatter a handful of 4 oz. If the breadth of land covered is 2 yards and you step 2 feet you will sow 450 lbs. per acre. Stepping 1½ feet, you will sow 600 lbs. per acre. Stepping 1 foot you will sow 900 lbs. per acre. The breadth of land covered is easily regulated by the angle at which the Nitrate leaves the hand. A gardener had better use Sulphate of Potash than Kainite, and he will usually find more benefit from Super-phosphate than either. The better way is to buy a Super-phosphate containing 3 or 4 per cent of Potash, and 10 or 12 per cent of soluble Phosphoric Acid. Sow 300 or 400 lbs. of Soda Superphosphate and 500 lbs. of Nitrate of Soda per acre over the whole garden in the Spring as soon as the frost is out of the soil. —JOSEPH HARRIS

543. **Croton Carrieri.** We cannot find any trace of such a species or variety among new or old garden plants, nor among "botanical" ones. But among tropical and sub-tropical plants we have many incon spicuous ones unknown to us.—

558. **Pine Needles as winter covering.** Excellent. Put them in about two inches deep.—W. F.

542. **Black Walnut Culture.** The Black Walnut grows finely on any reasonably graved soil, but best on a rich, deep, moist soil; at the base of a hill is a good place. For timber alone the young trees one or two years old should be planted in straight rows 4 feet apart each way, on deeply prepared ground, cultivated thoroughly the past three or four years, and then in 2 or 3 years gradually thin them out to 8, 12, 16, and at last to 20 feet apart, and then eventually to 30 by 30 feet apart; for nuts and timber combined they may be planted 8 feet apart in rows 20 feet apart. This tree is a very much faster grower than it is generally considered to be, if planted on good rich soil, and thoroughly cultivated while young. Its wood varies in color and quality on different soils. The better the soil, and growth the better the wood and color.—D. B. W.

547. **Arbor Vitæ Hedge.** The American Arbor Vitæ is the one generally used for hedges. The Siberian is a more dense, compact, warpish grower, but plants of it come much higher. The American should be planted in the center of a deeply prepared row 3 or 4 feet wide, enriched with old well rotted manure if the soil is poor. The plants should be such as have been transplanted 2 or more times, and may be planted 12 to 20 inches apart in the row and of a size of 10 to 40 or more inches in height. For immediate effect they may be 40 to 60 inches in height. The larger the plants the greater the cost per tree; 10 to 24 inches in height is the usual size. They should be well cultivated for 2 or 3 years, and then they may be sheared once or twice a year into any shape. Hemlock is rather the better tree for the purpose.—D. B. W.

567. **Dissolving Bones for making Fertilizers.** See a chapter on this subject in "Talks on Manures." Superphosphate is now so extensively made and is sold at such reasonable prices that it does not pay a farmer or gardener to make it himself. Better sell the bones and buy Super-phosphate and Nitrate of Soda: or if there is no market for them set out some Grapes or Asparagus and bury the bones a foot or eight inches deep in the ground below and as wide as your time and patience will permit.—JOSEPH HARRIS.

549. **Green Manuring for Fruit.** Yes, if the soil is good enough to grow a fairly heavy crop of Rye, Buckwheat, Red Clover, or Peas. These should be plowed under when in their strongest growth, just when the seed is in the milk. If the land is not rich enough to produce a good heavy crop of these, it should be manured until it will. The next spring after the green crop is turned under it should be plowed very deeply and the fruit plants planted. These should be thoroughly cultivated until middle of July, then Buckwheat sown thickly among them, then that turned under, and so year after year until the desired fertility is obtained. This is *the* practice of our best orchardists.—D. B. W.

560. **Pears that will Ripen well on Trees.** We think there are *no* varieties of Pears that will ripen up so finely on the tree as they will gathered at the right time and ripened up rightly in the house. Some varieties that never ripen fit for use on the tree are among the very finest when house ripened. Especially is this true of most summer and early autumn varieties; such, to ripen them to their highest quality, should be gathered as soon as fully grown and well colored but before any are mellow. Then if you wish to ripen quickly and finely spread them on a few inches deep on a bed comforter, say, and cover them with another in a *warm* room. If slowly in a cool room, or they may be placed in drawers, or in any situation, that is dark, where they will ripen quickly or slowly as the degree of heat; heat ripens, cold retards.—D. B. W.

566. **Applying Ashes.** Practically, you are perfectly safe in applying ashes to the land at any time. If the ashes set free any of the ammonia or other gases, the soil will hold it.—JOSEPH HARRIS.

517. **Euphorbia Jacquinæflora Culture.** This can be propagated from cuttings of the half ripened wood in April and May. They should be potted off into three-inch pots as soon as rooted, and shifted on from time to time as they require it during the summer months. From June to September they should be plunged in a sunny situation where they can be given careful attention as to watering, and pinching back the leading shoots so as to obtain bushy specimens. It is also advisable to turn the pots at times to prevent them from rooting through into the ground. About the middle of September they should be taken up, shifted if necessary, brought inside and placed where they are fully exposed to the sun in a temperature of not less than 60 degrees at any time. When the plants are coming into bloom liquid manure can be given at times to advantage. After blooming give a period of rest, and as soon as growth again commences, turn them out of their pots and repot, placing them in as small pots as possible, and when these are well filled with roots shift, and treat precisely as in the previous season. This Euphorbia dislikes to be over potted, and the pots must be thoroughly drained. It prefers a compost composed of two-thirds turfy loam, one-third well decayed manure, with a sprinkling of sharp sand.—C. E. P.

535. **Pruning Evergreens.** As you do not give the names of the evergreens you refer to it is difficult to give precise directions, but as a general rule Spruces, Pines and Firs may have the ends of the shoots pinched back while they are yet young and tender; while Arbor Vitæs, Box and others of a more compact growth may be trimmed back more severely with the shears as soon as the young growth is sufficiently hardened.—C. E. P.

550. **Salt for Quince Trees.** Yes. Sprinkle as much salt around the Quince as will make the ground look barely white all around the trees for 8 to 10 feet in early spring, say 1 to 2 qts. to a tree, according to size, and again in June. Every other year should be sufficient. The same treatment is excellent for Pear trees, especially Dwarfs. If the one application should not increase the color and health of the foliage do not repeat, for some soils have sufficient salt.—D. B. W.

The Culture of Fuchsias.

The Fuchsia needs no praise, and the subject of its cultivation may be summed up in comparatively few remarks.

The plants require to be grown rather fast, and therefore a starving system must not be practiced. They love warmth and moisture, and some amount of sunshine. They cannot endure a dry soil or a dry air, and a long-continued roasting glare of sunshine. No matter whether you wish to grow nice little bushes for a small greenhouse or the sitting-room window, or for sale as pot plants, or giant pyramids for a flower show, the routine practice will be nearly the same and must be given careful attention.

If grand specimens are desired take cuttings in September, but if only plants of moderate size, take them in spring as soon as you can get them. In the month of December or January prune a few old plants into shape and put them in a temperature of 60 degrees, and keep them regularly syringed. In the course of a month they will supply you with any number of cuttings, and to strike these is the simplest task in plant propagation.

In the earliest moment the cuttings should be potted off into bright two-inch or small three-inch pots, and soon after be shifted into four-inch and so on according to size. It is a bad plan to over-pot at any time (but they should not get much pot-bound), for the roots are too slow in finding their way into the fresh soil, and the whole mass may, in consequence, get sour.

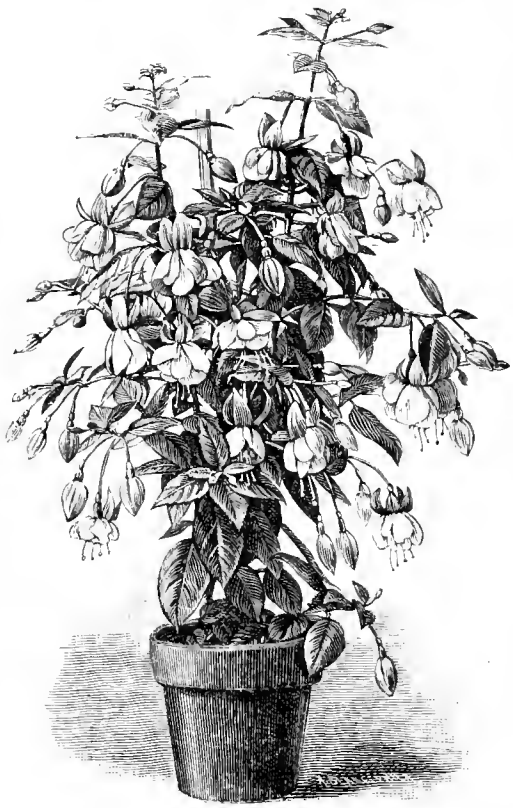
For a compost use two parts nice fibry loam and one part thoroughly decayed manure, with a little well rotten leaf mold or rotten hops, and a good sprinkling of sharp sand. The soil should be used rough; the larger the pot the more lumpy should the soil be. The pots should be moderately well drained and the plants potted firm, but not rammed too hard. If the plants do well they will make five to seven-inch pot specimens suitable for exhibiting in September.

Sometimes the plants will throw side shoots close to the soil, and at others they will not do so without stopping. But at all times it is as well to nip the top out when they get about a foot high; it strengthens the side shoots. For dwarf bushes the young plants must be stopped when eight or nine inches high, the young shoots again stopped and then trained out neatly with sticks. The main stem must have a good stout stake to keep it upright. The plants should not be stopped for six weeks to two months before they are expected to be in flower.

For growing trees or standards no training is required beyond rubbing off the side shoots, and letting the main stem run up to whatever height is required. It must then be topped and allowed to throw out shoots, which must be pinched twice or three times to form a handsome head.

Fuchsia plants kept over summer should be stood out-of-doors, at least toward autumn, to ripen the wood, but they should be housed before any severe frost sets in, for though a few degrees will not do much harm they are quite as well off without it. It is a bad plan to store the plants away for the winter in outhouses where they can receive no attention; they never break so regularly and well in the spring if they get entirely dry during winter, though it is very little water that they want for three or four months in the dormant season. Well made standards must indeed be kept growing slowly all winter.

Old plants kept over mainly for bloom should be pruned in February and placed in mild heat, and as soon as they begin to break take them out of the pots and remove as much of the old soil from them as you can without injuring the roots, and put them into pots two sizes smaller, or in the same pots again, and keep them well syringed from the time they are started until they begin to flower.



A YOUNG POT FUCHSIA.

From 50° to 60° is a good heat for growing Fuchsias at all times, but if they are wanted to be in flower at any particular time they will stand 70° to 80°; but of course the wood is much longer jointed when they are grown in a high temperature. It is not advisable to shade the plants much, though they will not stand much sunshine.

There can be no better liquid manure than is made by putting fresh horse droppings into a tub of soft water, and to use the solution quite clear and considerably diluted. It should be near the same temperature as the house the plants are in, even one or two degrees warmer; colder it ought not to be. It is not well to play the syringe on the plants when they are in flower, for the splashing of the water disfigures the leaves.

The Plant Houses not to be Closed

The stronger advocates of the use of hardy plants for the adornment of lawns and flower gardens advance as a main argument the saving the expense of annual propagation and wintering over of large numbers of tender plants. Bearing, as the argument is supposed to do, directly on the purse, it no doubt carries much weight. And yet we must not forget that the two classes referred to are so essentially distinct in their beautifying qualities that no true gardener can or ever will entertain the idea of giving up either the one or the other.

If the yearly bedding out of tender plants is more costly than the planting and keeping up of a border of hardy perennials, there are compensations, too, that go far towards reconciling the increased expense. There is, for one, the much prized advantage of brilliancy of color and continuity of bloom in a compact form, which can never be adequately met in hardy plants alone. The quick response in a handsome display of flowers, foliage and forms, following on the investment for the planting stock is another merit in favor of the latter, viewing the matter, as we are largely bound to do, from the popular standpoint. Then, too, the bedding out system tends to enlarge the taste for flowers and plants through drawing out in the vicinity of every fair greenhouse of perhaps half a dozen cultivators of flowers in beds, vases and pots, for every one to be found making a respectable show with hardy plants alone. The fact that the cultivation of tender plants in the summer out-of-doors serves directly to the increased culture of the same as house plants, in keeping them over the winter, must also be regarded.

True the bedding out system has often been very badly represented in those gardens where it has been undertaken, even on a large and expensive scale. But the fault has risen mainly through a lack of appreciation of the effects of color and arrangement. We have not a word against bright colors. They are as indispensable as are the fine and free forms of growth that are among the marks of the hardy border from early to late. In either case if there be faults they come from the misuse of the materials employed.

But what about the employment of hardy herbaceous plants alone in the flower garden? Shall we revert to the condition of gardens before the bedding-out system, with what may perchance have developed in it that is bad, opened the eyes of the masses to the beauty of flowers? Shall we not rather change what may be bad to the better in the bedding out system, and at the same time add all we can of the beautiful, whether they be tender or hardy, annual or perennial, to the number of our out-door decorative plants?

We must also not forget that the treatment of hardy plants from a decorative point of view is in many cases quite as bad as ordinary bedding ever could be.

Passing through gardens we often hear the remark that there is always something charmingly new and interesting coming out among herbaceous plants as the growth and flowers unfold. It is a point to be appreciated at its full value. At the same time let us not lose sight of the fact that a great majority of garden possessors are not seeking so much for something specially interesting to the close beholder as bold effects and plenty of flowers. Whether these are tender, half hardy, hardy, or of the many desirable seed-grown annuals, biennials or perennials, will not trouble them.

And whether viewed from the standpoint of the popular flower grower, or from that higher one of the cultivated taste that demands the best results for a reasonable outlay, it must be admitted that the last named end is attainable only as we assume the attitude of slighting the use of no particular section of plants. At any rate, unless guided by very stringent motives of economy, the most gratifying results can never be reached with the greenhouse doors closed.

THE COMPLETE GARDEN.*

XII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 64.

LABELS AND LABELING. Directions for making a permanent record of the trees, etc. planted in a garden were given in connection with Figure 36. But in addition to such a record every kind of tree, shrub and plant should be plainly labeled. Good labels are of great value in promoting that familiarity with kinds which all gardeners should aim to acquire. To know every tree and plant by its correct name is one of the strongest marks of an intelligent horticulturist. Then, too, labels have the advantage of being always accessible to observers, as a record (important in its place) cannot be. With having all the plants plainly labeled our grounds become schools of horticulture to all who visit them. The first question we usually ask on seeing fine specimens of any kind, is "What is it?" and the presence or absence of a plain label often makes just the difference between one's going away informed on that point or not. The importance of correct labeling in the orchard and fruit garden is by far too often overlooked. I venture to say that not one orchard in ten is plainly labeled three years after planting, a thing strange indeed in view of the advantages and slight cost of providing good labels.

The labels from the nursery seldom answer permanently. Usually they are unpainted, so that the name soon washes out; or the wire may be too light to endure for more than a few seasons, or the wood itself be so thin and weak as soon to become detached from the wire. They also are usually attached to the tree in a way that calls for a word of caution against leaving them. I refer to the fact of the wire being closely drawn around the branch so that the label may not shake off. If left in this shape the chances are that by the growth of the branch the wire must soon cut through the young bark, and thus cause serious damage, if not amputation of the part eventually.

Some forms of good permanent labels occur in the accompanying Figure 41, *a* to *d* being suitable for trees and shrubs, and *c* a stake label for low plants. The first one, *a*, is a common and satisfactory form if it is well made. It consists of Pine, or Red Cedar wood, five or six inches long, an inch or more wide, and one-fourth inch or somewhat less thick, punctured with a hole to receive its wire at about three-fourths of an inch from the end. Copper wire, No. 16, should be used in this and other forms of permanent labels. With painting this label white and writing the name with a soft, black pencil before the paint becomes dry the name will last well for years. The next three forms are zinc labels with and without wires. These styles are in some respects superior to wooden labels for permanent use. They are cheaper and are practically indestructible. Best of all the writing on them with a common lead pencil will if exposed to the weather last for a life-time. No painting or other preparation is necessary beyond roughing the surface a little by exposure to salt water, so as to take a strong mark from the pencil. The forms *c* and *d*, consisting of merely a tapering strip of zinc, about an inch wide at the broad end, and six inches long, are secured to the branch, the first by the simplest manner possible of coiling the narrow end two or three times around the branch, the other by returning the end through a hole about the middle of the label. The zinc label *b* has the single advantage that by having the wire shorter or longer it can be attached to branches of any size. Refuse scrap zinc will make such labels by the hundred at almost no cost.

In attaching labels to trees the important point already hinted at of providing for the future growth of the branch must not be neglected. Style *c* provides for this for a number of years through the coil opening as the growth advances. In the other cases it is only necessary to have the loop of such size that many years will pass before it can become filled out. Of course in time it becomes necessary to provide a greater length of wire or size of loop.

The stake label *c* for low plants is a common form with the addition of a notch at the side to prevent heaving by the frost in winter. A good size to have is from an inch to an inch and a half square, and from a foot to half as much more in length. White Pine without sap is usually used, but Red Cedar is more durable. Such labels should be planed, well painted with white lead and linseed oil, and have the name in lead pencil or black paint. Some gardeners employ a light stake as an upright and then use a zinc label for the name, tacking this on the top of the stake.

FIG. 42. A VINE AND SHRUBBERY WALK.

SELECTIONS OF ORNAMENTAL WOODY GROWTHS.

In the hardy trees, shrubs and vines are to be found some of the finest and most satisfactory forms of natural garden beauty. As a class they possess a dignity of character not common to any other forms of growth. Planted as single specimens, or in small or large groups, or to cover vast areas, and the fitness of trees and like woody growths, for contributing majestic beauty to the landscape cannot be questioned, so long as sufficient openness is preserved to the surroundings for well showing off their forms and charms. With the greatest degree of propriety, therefore, they may always be employed as major features in the planting of any place of sufficient size to accommodate their development, a thing not as well to be said of most other forms of useful and ornamental growths.

Starting out to make a selection of woody growths for furnishing a place, a matter of first importance is to gain an adequate idea of the large variety of materials at our command. In this it may truly be said that all the world, in corresponding latitudes, contributes. The very fact that we may have in our gardens actual representatives of the growths common to other foreign lands, even to the antipodes, should serve to render the planting of our places the more interesting. It is easy indeed to have a Japanese, Chinese, British, Siberian, etc., etc., branch of the garden by the use of hardy growths alone, say nothing of the chance to develop this idea as applying even to tropical lands by the aid of the glasshouse range.

Not only is the great variety afforded by the different natural species of hardy trees, etc., to be taken into account in making selections, but the improved varieties of these obtained by accident and through culture, numbering far up in the hundreds, are quite as important to be considered. We find for example no material in Nature so extremely striking to the eye as an improved Purple-leaved Beech, a Cut-leaved Oak, a Variegated Cornelian Cherry, and many others. No one indeed can enter upon a full examination of the subject of material and the varied beauty afforded in different forms, sizes, habits and colors of foliage and flowers without being impressed with the fact of the too common meagerness of assortments employed in the average grounds of the people.

As between the two familiar forms of ornamental growths, trees and shrubs, too little regard is yet paid by planters to the peculiar value of the shrubs. This is especially the case as regards their fitness for embellishing grounds of limited area. In beauty of form and foliage they equal the larger trees. Most of them in addition to other merits produce an abundance of flowers of great beauty and sweetness, and in the different species yield a succession throughout the season, while the evergreen kinds are attractive both in summer and winter. As a rule all the shrubs grow easily, and after transplanting develop a full measure of beauty in much less time than is required by trees. In good soil they take hold quickly, and in a few years show a development of beauty and character scarcely excelled in after years, though they may increase much in size. On this and yet other accounts I am always free to recommend a liberal use of the flowering and other shrubs in planting both large and small places.

In deciding upon the trees, shrubs, etc., to be used, a matter of prime importance is to gain an idea of the size they respectively will reach in time. If there is space for a Lilac or Purple Fringe tree, for example, an Elm or Walnut requiring many times the space should not be chosen. The same point affects also the distance apart at which to plant. For this reason in bringing before my readers lists of hardy planting material I have thought it desirable to indicate

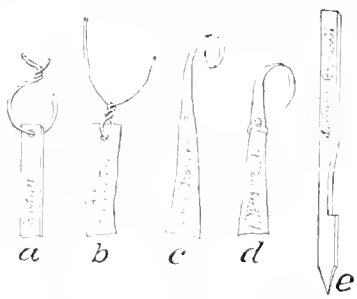


Fig. 41. Labels of Various Forms.

comparative sizes by the use of letters of the alphabet as follows:

A	Indicates	Trees,	60 feet and Upwards High.
B	"	"	30 to 60 feet high,
C	"	"	15 to 30 "
D	"	"	9 to 15 "
E	"	"	5 to 9 "
F	"	Shrubs,	9 to 15 "
G	"	"	5 to 9 "
H	"	"	1 to 5 "

I indicates that the kind may be kept somewhat reduced in size by pruning.

J indicates slight tenderness in the North, especially when young.

It should, however, be understood that such indications as to size can only be accepted as approximately correct, for variations of soil, climate and treatment have a telling effect in causing variations of size.

In the next issue I will begin an enumeration of desirable shrubs, etc., arranged into various classes to facilitate selection.

(To be continued next month.)

Statesmen as Botanists and Horticulturists.

"Do public men know or care much about botany or your garden?" a New York Star reporter recently asked William R. Smith, Superintendent of the Botanic Gardens at Washington.

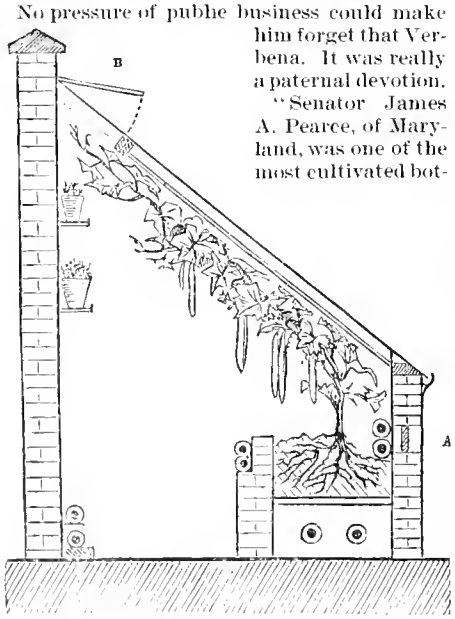
"That's a question," he replied, "that can be answered in several ways. To most of them the science is a sealed book. They only know the garden as a convenient flower bank to draw on when their wives give dinner parties, or want to fix up for receptions, or their sweethearts need a few Pansies for remembrance. Of course there's no sympathy between such propensities and mine.

"But there are exceptions, no doubt?"

"Oh, yes, and some very distinguished ones. Some public men have excellent tastes and are experts in botany. Mr. Sumner was a great enthusiast: he ran to trees, and was about the most intelligent man on the subject I ever met in public life. He used to tell me that when traveling he would peer out of the car windows by the hour on the lookout for beautiful trees. He would gaze as lovingly as a fond parent on that old Italian Beech that stood so long east of the Capitol, and what an apostrophe he paid it in one of his speeches! The last enjoyment I had with him, shortly before he died, was in visiting a favorite Elm of his on Boston Common. Senator Ingalls, of Kansas, a very dilettante gentleman in his tastes, also runs to trees, and is a most devoted student of arboriculture. Some of the most valuable suggestions about distributing plants in the West come from him.

"Mr. Fessenden, of Maine, was an ardent apostle all through his long public life. I remember that his wife had a Sweet Verbena in their home in Maine of which she was very fond. She watched it tenderly as a child, and Mr. Fessenden shared the feeling so thoroughly that for thirteen years he would journey home from Washington to take up the plant in the autumn, and make another trip in the springtime to set it out. No pressure of pubhe business could make him forget that Verbena. It was really a paternal devotion.

"Senator James A. Pearce, of Maryland, was one of the most cultivated botanists ever in Congress. Scarcely a day passed that he did not drop in on me to watch the growth of some favorite plant or some new experiment, and his ideas were always scientific and valuable. And then there was B. Gratz Brown, a very warm lover of flowers and thorough master of their cultivation. During all the time he was in the Senate I don't believe he missed a day at the garden, and we would chat for hours when he felt in the humor.



A Cucumber Forcing House.

"There's another botanist in Congress, a most ardent disciple, and I know the name will surprise you—Mr. Holman, of Indiana. No one has been in Congress since I can remember, and that's a long time, with a more hearty and intelligent love for the garden. He is a frequent visitor, and you can see from his conversation that he watches every new phase of the science as keenly as he does the money bags of the treasury. It seems to be a mental exhilaration for him to commune with these curious plants from all over the world, and study their hidden life. He is quite as familiar with the botanical names and the habits of plants and flowers as most professional botanists. He picked it up as a recreation, and his spare time is nearly all devoted to it.

"Sam Cox is a first-class botanist. He is a walking cyclopædia on every subject covered by books. If any phase of a new subject is introduced, Cox will know enough of some kindred subject to give him the key to the situation, and it's really incredible how soon he can inform himself. Now in botany, for instance, he will strike a snag some afternoon that he didn't know anything about, but the next morning he'll come around with his mental channel all bridged out. He can learn more in shorter time than any man I ever saw."

A Winter and Spring Cucumber House.

The question is often put, says a writer in Gardening Illustrated, as to what is the best form and arrangement to adopt for a house to produce good Cucumbers at the times above-mentioned; we therefore give an illustration of a section of a house admirably adapted in every way to the purpose in view. It is 7 feet wide, 10 feet high at the back, and 4 feet high in the front—the length is, of course, optional—and should face due south, and be, if possible, sheltered from the north and east winds, but not by anything that will in any way obstruct the light.

A house of these dimensions gives an ample roof area or training surface for either Cucumbers or Melons. Three rows of hot-water pipes are shown in the plan, and this quantity, though it may appear large, will not be found too much in severe winters, for it takes a large amount of heating surface to keep up high temperatures at such times without making the pipes hotter than they ought to be.

Each row of pipes should be furnished with a stop valve, and in mild weather the front row may be turned off, as, being nearest to the plants, it is more likely to cause injury than the others should the pipes get too hot at any time. The ventilation is effected as shown at A and B in the plan.

Orchards in Sod—Experiments at the Michigan Agricultural College.

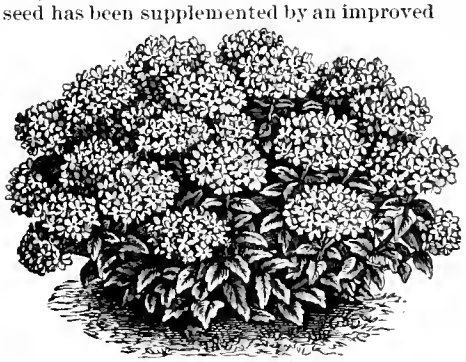
Permanent sod is an injury to the orchard. This has been proved in the experience of nearly every successful orchardist. It is forcibly illustrated in the instance of the old College orchard.

In the earlier experiments conducted by Dr. Beal the same fact was emphasized. For some years he kept a part of the trees in sod; others were cultivated thoroughly, while still others were cultivated at varying distances from the body of the tree. Even as early as 1874 he found that "trees in grass made less growth, looked yellow in foliage, and bore smaller fruit and apparently less of it." In 1875 he observed that "the evidences look more and more strongly every year against the propriety of leaving trees, in our section, in grass. They have stood the severe winters no better; they have borne no better; the apples are smaller; the trees grow more slowly, and more have died than of the cultivated ones.

So marked have been the results that we have plowed up about half that part which was left in grass.—College Report.

Something New in Verbenas.

That improvement in the Verbena which admits of the growing of deep blues, scarlets, white and other colors quite true from seed has been supplemented by an improved


The New Dwarf Verbena.

form of growth that is quite as constant. We refer to Verbena hybrida compata nana, illustrated herewith, and which appears for the first time, and as a variety that reproduces itself very true from seed.

The habit of this Verbena is bushy and compact, as shown in our engraving, instead of long jointed and spreading like the ordinary sorts. This should prove a welcome addition to our garden flowers, for who does not prefer compact, sturdy plants which substantially support themselves, to straggling ones branching in all directions.

The branches, according to our German correspondent, David Sachs, of Quedlinburg, the well-known seedsman, measure scarcely half the length of those of the old kind, are of short, vigorous habit, and gather themselves into a compact bush of only 5 inches in height, which is literally covered with beautiful umbels of flowers.

Repeated endeavors have been made to obtain compact Verbenas, but hitherto with more or less doubtful results; but the opinion of competent men seems to be that this sort is more perfect and constant than any former attempts at compact Verbenas.

518. **The Culture of Peppermint.** The crop is raised on low, mucky ground. The land is plowed in the spring. It is then laid off in furrows 18 inches apart, and sets, portions of old plants, are planted closely together in the row. This is done early in April. The roots are transplanted every other year. The roots that are planted this year, after the crop is gathered, will be transplanted in every other row for next year's crop. The first year's crop is always the best, because the plant is then freest from weeds. Usually they are allowed to run only two years, after which the ground is plowed. When the plants have grown to about 2½ feet in height they ripen. The harvest begins usually in the last of August. It is cut like clover, with a cradle, and raked into cocks, where it is allowed to wilt a little before it is taken to the distillery. Distillation continues until the last of October. The yield, on an average, is about 20 pounds to the acre in a good season.

499. **Grapes in Florida.** Northern grown Grape-vines will thrive in this State. Whether they will do as well as home grown stock is a question not yet settled. The presumption is that they will not. The climate is so different that the change must affect them somewhat. Still thousands of Northern grown Grape-vines have been planted in the State and are doing well. I prefer good one-year vines to ordinary two-year vines.—W. C. STEELE, *Switzerland, Fla.*

529. **Renovating Old Trees.** Dig in at once a large quantity of well decayed manure as far as the roots are likely to extend; or else dig a deep, wide trench around the trees, and fill it up with a compost composed of turfy loam and well decayed manure in equal parts.—C. E. P.

531. **Azalea Leaves Dropping.** You may be giving your plants too much water, or else they may be infested with the red spider, either of which will cause the leaves to drop. Sponge off the leaves and stems carefully with soapy water and then keep in a cool, airy situation. From now to the middle of March water sparingly, keeping the soil only just moist.—C. E. P.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. FEBRUARY, 1888. No. 5.

O Winter!

O Winter! ruler of the inverted year,
Thy scattered hair with sleet-like ashes filled,
Thy breath congealed upon thy lips, thy cheeks
Fringed with a beard made white with other snows
Than those of age; thy forehead wrapped in clouds,
A leafless branch thy sceptre, and thy throne
A sliding car indebted to no wheels,
But urged by storms along its slippery way;
I love thee, all unlovely as thou seemst,
And dreaded as thou art.

—*Cowper.*

A PLANTATION of Century plants has been started in Orange Co., Florida, for growing fibre.

FOR COMBINING ornament with utility one could go much farther and do worse than to plant a group of Siberian Crab Apples on a large lawn. Handsome in habit, in flower and in fruit.

APPLES ABROAD. Recent cable advices from Liverpool and Glasgow report a demand in those markets for Baldwins and Russets, and that an improvement in prices may be looked for shortly. Baldwins are selling at Liverpool at 16s. 6d. to 17s. 6d. per barrel.

FROZEN PLANTS. Mr. Peter Henderson has made the statement that in his experience with thousands of frozen plants he has tried all manner of experiments, and found no better method than to get them out of the freezing atmosphere to some place warm enough to be just above the point of freezing; or, if there are too many to do that, get up the fire as rapidly as possible, and raise the temperature.

PUBLIC PARKS AND PUBLIC PEACE. A Vienna newspaper supports a suggestion for the permanent closing of Trafalgar Square, London, to mob meetings by laying it out as a public garden. The propensity to convert any large flagged place into a forum is irresistable, remarks this journal, but flower-beds, grass plots and little railings are a great hindrance to mass meetings. Red-coated Geraniums would clear the square more effectually than red-coated guardsmen, and there would probably be less sympathy for a crowd proceeding to trample down flowers than for one attacking policemen. The sight of devastated flower beds would impress the horror of mob violence more forcibly on cultivated minds than scores of policemen's helmets.

LOOK OUT FOR TRAVELING GRAFTERS. According to Z. C. Fairbanks of Traverse City, Mich., a set of scalawag grafters imposed on some of his neighbors a year ago. They claimed to hail from Ohio, and carried plenty of fine samples of fruit. These they showed to farmers and had no difficulty in taking orders for setting grafts of the same varieties, so claimed, at a price of eight cents per graft. They came in the spring in full working capacity, and wherever they got a chance at a tree or an orchard they made it count for themselves. In one case they set 60 grafts in one Crab Apple tree, at a total cost of $4.80, an amount that would have furnished the owner 19 good Apple trees at 25 cents each. And they were common Apple grafts too, when it has long since been demonstrated that such grafting is a failure. At the outside three cents a graft is a good price to pay for doing reliable grafting, and 2 cents is not a small price where a fair sized job is to be done. Our readers are cautioned to have nothing to do with strange traveling grafters.

STUDY THE ADVERTISING PAGES. This journal comprises two main departments, the one pertaining to Gardening Information, the other to the no less important matters of Horticultural Materials. The latter is found in the advertising pages, and to everyone interested in the culture of fruits, flowers, or vegetables for pleasure or for market, this department should be found as profitable to read closely as any portion of the journal. The establishments here represented are the foremost of their kind in the country, and such as can, without exception, we believe, be recommended for their reliability. Let but firms like these be patronized by the masses, through the help of the comprehensive catalogues they offer to buyers, instead of giving orders to the strange agents that at this season walk to and fro throughout the earth, and the gains to the Horticulture of our country, and to the purses of growers, would be something immense. Another thought: taking, as we do, great pains to have the announcements of only reliable dealers in our columns, the reader should appreciate the advantage of having spread before his eye such a concise and yet comprehensive statement of the stock held in the nurseries, seed stores, and greenhouses of the country, and all at his disposal for fair prices. So we say, study the advertising pages if you would conduct the horticultural affairs under your charge to the best advantage.

Celery Culture at Kalamazoo, Mich.

JOHN VAN BOCHOVE, KALAMAZOO, MICH.

The bonanza of the City of Kalamazoo is undoubtedly found in Celery culture. The magnificent growth and perfection of this crop here has attracted widespread attention, and in the opinion of many cannot be surpassed elsewhere.

About fourteen years ago a few Holland gardeners raised some small patches on what they called moss land, having more than enough to supply the home market. As its superior quality and flavor became known, a sudden demand for it caused this infantile industry to spring at once into a most flourishing condition. Now, about two thousand hard-working people devote their entire time the year around to this work, placing upon the market the choicest product. While at first a few acres were planted, with misgivings as to the effect upon the market, now many hundreds are, with no misgivings as to the result. These facts show that the Celery grown here must be of an excellent quality, and as cheap as other markets, otherwise the demand would not continue. It is estimated that a total of 3500 people get their living either directly or indirectly from Celery.

Our best Celery soil here is muck, formed of decayed vegetable matter, that being preferred which has a subsoil of turf, the muck being from one to ten feet in depth—the deeper the better. This muck is very black and much lighter than upland. In hilling and all other work it requires much less than ordinary soil labor.

Unlike the American, the Hollanders, who grow most of the Celery here, delight in working this low, wet land. Each man, as a rule, grows from one to three acres, or as much as he and his family can tend and no more. A few enterprising firms have from ten to twenty and thirty acres growing in one solid body, the rows unbroken for one-quarter of a mile, and beautifully straight. The land is all drained by ditches, and it is of the utmost importance to be drained thoroughly, for if the land is not relieved of the sourness the Celery will not grow.

For early Celery seed is sown in our greenhouses and hot-beds, and transplanted to the garden from May 1 to June 1, which is as early as we care to risk the plants outside, experience having proved nothing to be gained by setting out sooner. Hot-bed plants grown on upland will nearly all run to seed, but in this soil, so well adapted to the plant, very few seeders are produced.

Seed is sown outside as soon as the ground can be worked in spring, the plants being transplanted as soon as large enough, which is usually in about six weeks from time of sowing. The plants are not a little trouble to raise, requiring care and skill, and if only a few thousand are wanted it is cheaper to buy them. The Celery is cultivated once a week through the season. To grow Celery to perfection requires an abundance of manure, stable manure being preferred to anything else.

By the method of blanching Celery as practiced here we are enabled to place it on the market by July 1, and during the hottest weather free from rust and in as fine condition as in October. Not infrequently I have had a crop of Celery blanched and dug in nine weeks from time of transplanting. The rapid growth on this land enables us in most seasons to grow three crops of this vegetable on the same land in one season. It takes from ten to fourteen days to blanch the product, according to how hot the weather is. The warmer the weather the faster it blanches. In storing it is put away in trenches and removed from there to coops as wanted for market. The last crop is all in by November 1, when cold weather may be expected.

The varieties raised are few, the Golden Dwarf being mostly grown. The object here being quality, not quantity, no giant varieties are grown.

The shipping of Celery commences July 1, and continues until the Celery is all disposed of, which is usually before January 1. Twenty and thirty, and not infrequently fifty tons are shipped daily during the shipping season.

Some of the heaviest producers ship directly to their customers, and in the busiest part of the season are unable to keep up with their orders. The Celery is all tied in "dozen" bunches, twelve stalks to the bunch. It sold last season for twenty cents per dozen by the shipper, the grower receiving fifteen cents. It is shipped in new, light, strong boxes, holding from six up to thirty dozen. It is dug and shipped the same day, thus insuring its freshness. Going mostly by express to all parts of the union, some to Canada. It is shipped to some extent by refrigerator cars. The express companies make a very low rate, and provide special cars to transport it.

Another branch of this industry, which has sprung up within the last few years, is the shipping of plants. One firm of this city shipped last season six hundred thousand plants, besides employing as many more for their own planting.

Smilax as a Window Plant.

MRS. L. H. GALE, BARTON CO., MO.

This plant, botanically known as *Myrsiphyllum asparagoides*, is one of the prettiest climbing plants with which I am acquainted. There are no large leaves, or gaudy colored flowers to attract attention, but everything about the plant from its long, slender, grass-like stem to its small, delicate, fragrant,

white flowers, are the very perfection of grace and neatness.

The roots being small, require but little pot room or soil, and the vines shoot up rapidly, clinging to any slight support given in the form of twine, wire, or trellis. Plants are easily produced from seed, or they can be had very cheaply of almost any florist.

I do not think the merits of this neat little climber are fully appreciated, by those who take delight in cultivating window plants, as it is especially adapted to this purpose. While many plants of a similar habit become large, coarse and heavy when fully developed, the Smilax never reaches such a stage, but is always light and graceful, no matter how strong and vigorous the growth. It is cultivated to considerable extent by most florists, the ladies being their principal customers, for Smilax is splendid for decorations, and for giving the final touches to a lady's toilet.

Although the vine appears to be very delicate and fragile it is quite the reverse, for the stems are almost as tough as iron wire, and the leaves remain fresh without wilting for some time after being separated from the parent plant, even in a warm atmosphere.

Improving the School-Yard.

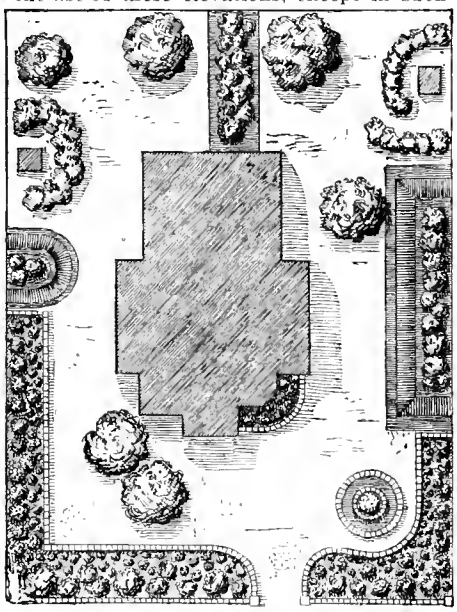
Examples of good school-yard gardening, as intimated last month, are not very abundant. This will be the only excuse needed for presenting as our second illustration in this series a modified form of a very fine school yard which the writer met a few years ago in the City of London, England. For although the subject of our illustration was a gravel-surfaced town yard, it contains one or more features which might well enter into much work of this kind in town or country, and that too, whether grass or gravel serves to cover the surface of the yard.

The school yard illustrated in the present instance contains several striking features of horticultural adornment. The most conspicuous of these perhaps are the borders of flowering shrubs and plants which occupy a position next to the boundary in the front part of the yard, and also at one place against the school building. These borders are in the main about fifteen feet in width and together more than two-hundred feet in length. They are defined at the front by a low stone or brick coping, as a protection to the growths within and to divide the cultivated surface of the border from the gravelled surface without. For the sake of economy a substitnde might in similar work be provided, by the use of sections of Cedar or Chestnut wood set uprightly in the soil, or even by a low wooden fence.

The shrubs and plants occupying these borders are chiefly of hardy kinds, and such as yield a profusion of flowers throughout the entire season with little attention. About the only care a border of the kind requires after once it is started is to till the soil, manure it annually (the best season being in the autumn), and to keep the shrubs and plants healthy and within bounds by periodical pruning, dividing, etc.

Next in prominence to the cultivated border, if indeed they do not exceed them, are the narrow elevated areas with slopes, shown at the termination of the borders against the line on both sides of the yard, about midway front and rear. The one to the right is long and narrow, the other circular in outline. These raised beds are surmounted with shrubs on a grassy surface, and the slopes also are grass covered. The idea which called them into use is a very forcible one as applying to town schools, attended perhaps by near 1,000 pupils each, it being the same also which calls for gravel instead of grass throughout such yards. Reference is had to the fact that the grass on the general surface has no fair chance of existence, and in order to have any of the peculiar beauty that a bit of sward is capable of affording, this must be shelved and sloped, so to speak, to save it from being trodden to death.

An indirect advantage also presents itself in the use of these miniature shrub plateaus. The striking difference in their appearance and of that of the coping-edged shrub borders first described, is so marked as to afford a variety in the embellishments, which would, by employing solely the one or the other style, be quite impossible to possess. And yet we must be slow in recommending the use of these elevations, except in such



A FINELY-EMBELLISHED SCHOOL YARD.

localities as are provided with a free use of hydrant water for keeping them sufficiently watered in dry weather. In any other yards the severe droughts to which we are so frequently subject would be liable to prove directly disastrous to their beauty. Such elevations depend not only on a good color of grass and shrubs for their beauty, but as the slopes and angles should be very well graded and defined, the frequent use of the lawn mower to keep the grass surface shapely is essential to the best appearance.

In the front right-hand section of the yard, as shown by the illustration, is another feature of adornment that should be described. This is the circular object near the shrub border and which corresponds in its outline with the front of the shrub border, at this point laid out on a curve. This feature may be said to embody the idea of both of the main ones heretofore described. First there is a low circular coping, uniform with the one which defines the shrub borders, but which, in this instance, is filled to the top with earth and a surface of sward. Centrally from this sward rises a second coping similar to the first, but somewhat higher, and this serves to contain a bed of bright flowers and plants, such as Geraniums, Coleus, and the like, which stand out from a surface of soil, rounded slightly upward from the top of the coping. It is not difficult to perceive that the design here as elsewhere was to protect the horticultural adornments from accidental or other injury at the hands of the children.

The other features of this well designed school-yard, consist chiefly of half a dozen shade trees and several screens of strong growing shrubs, all of which are planted on the common level.

One cannot contemplate a school-yard of this kind, studying its varied delightful parts, without being impressed with the gain that would be derived by the presence of many similarly improved school-yards throughout our country, on the minds and characters of the young. They would cost some money in their construction, a few hundred dollars at the outside for each perhaps, and then a small annual maintenance fund. But what is that for any one of our school districts representing valuations in real estate aggregating hundreds of thousands of dollars often.

Successful Grape Grafting.

BY DR. G. STAYMAN, LEAVENWORTH, KANSAS.

But few Grape growers appear to fully understand this subject, judging from the many failures constantly reported. As almost every one who is interested in new high priced Grapes wishes to realize from them as soon as possible, we will give our very successful method of procedure in grafting such and all vines. Much of what we present has never been published before, the process described being the outcome of more than thirty years' experience in grafting the Grape by every known method.

As new Grapes of promise appear we procure one or more vines of each, according to our opinion of merit. The first cost is a small matter if it proves of value, and no great loss if not, it being worth something to know that fact from experience.

We plant in well prepared rich soil, give them good care and cultivation, and train up one good cane from each plant to a stake. In the fall, after the first hard, killing frost, this is cut back to two buds, and it is covered over when cold weather sets in.

The wood is cut up at once before it dries a particle into lengths of from nine to eleven inches, according to the space between the buds, cutting an inch above a bud at the top. These cuttings are labelled and tied with a willow, or something that will not rot, and are stored away in damp earth or sawdust free from frost.

We graft all species and varieties and ages of vines, if vigorous and healthy, with about the same success. There is nothing in the adaptability of one stock over another, except some varieties work better and make more enduring vines, as Norton's Virginia and Cynthiana.

We commence in the spring after the frost is out and the soil is well settled, and not too wet, and all danger of hard freezing is over. This occnrs about a week or ten days before the vines commence to bleed. This period is selected because hard freezing will move the grafts after they are once set unless covered, a danger to be obviated.

The first step is to cut the vines off near the ground and clear them and other rubbish away. A man then digs around the vines about eighteen inches in diameter and ten inches or more deep, cutting off all surface roots. See *a* in the figure. The earth is taken out clean to the stems, but with care to not injure the stocks where they are to be grafted. A good sharp shoemaker's knife, soft tow twine, as grocers use, a sharp saw, a strong pruning shears and a light mallet, are also provided.

We then assort our wood, taking all that is the size of a lead pencil and over for grafting in the ground; the stronger the better, for old vines. The grafts are wrapped up in a damp cloth to prevent drying, and with the tools are put in a basket. If the vines are not over three-fourths of an inch in diameter, cut them off with the shears about eight inches below the surface of the ground, at a clean smooth place, if any. If larger we saw them off.

Now take the side of the stock that will make the straightest edge and cut it up from below, sloping on one side to the top of the stock, as shown at *a*. This slope should be cut true and about one inch and a half long, like in whip-grafting, but not over from one fourth to half an inch deep at the top of the small stocks. Next place

the knife about one eighth of an inch from the top of the slope, and with the mallet drive it down, cutting a tongue about one inch and a half long. Then take your graft, *b* in the engraving, and slope it off on one side and cut a tongue in it, as in whip-grafting. The outside rough bark, if any, from graft and stock, should be taken off. Insert the graft on one side of the stock to match the inner bark exactly on the edge of the tongue. If the stock is large put a graft in on the opposite side also.

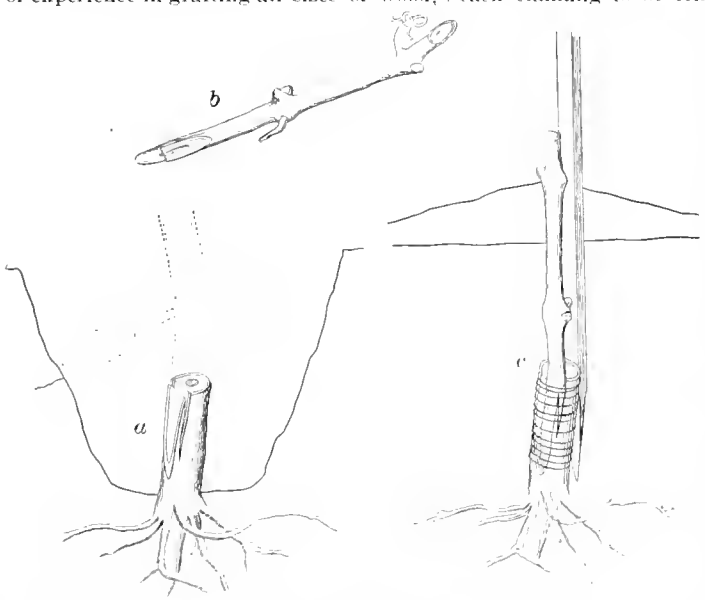
The graft rightly in position push it down as tight as you can without breaking. Then wrap firmly with twine, which will leave the work appearing as in the Figure *c*. The soil should be packed tight around the graft (particularly the bottom) by tramping on it carefully and firmly so as to not move the graft, filling up to the top bud. Then stick a small stake at the graft to mark the place and for tying the young shoots to.

Let it be remembered always that success in Grape grafting depends: 1st—*Upon the fresh condition and length of the grafts.* 2nd—*The soundness of the wood and buds.* 3rd—*The perfection of work.*

Should the grafts not be as fresh as if just taken off the vines, and of sufficient length, they will dry out and will neither callous, throw out roots, or unite with the stocks. In case the stocks are of a character not admitting of grafting at the proper depth, then graft them higher up and fill and bank up around them to the top bud. This, however, will not be as successful, or the vines as good, as the deep grafted ones, because the union will be less perfect, and the roots too shallow to bear severe winters. With vines that are properly set and cultivated this fault need never occur.

In grafting small vines, either in the ground or out of it, we whip and tongue graft them in the same manner with grafts of the same length. No attention whatever is paid to the buds or the size of the grafts except to use the larger scions on the larger stocks. To try to match them on both sides is useless, and time wasted.

We have in this article given no speculative theory, but facts based on many years of experience in grafting all sizes of wood, from two inches in length with a single bud, to a foot long with half a dozen buds, and on vines from one to twenty years old. With the conditions faithfully fulfilled, at least 95 per cent will grow on either young or old vines. Last year 98 per cent grew, and in very many instances made an aggregate of from 100 to 150 feet of wood. These vines are well united, firm and strong almost as before grafted, and will in another season or so bear a full crop.



a. The stock prepared—dotted lines showing the part including surface roots removed. b. The scion prepared. c. The union, showing manner of tying, and banking up, as well as the stake.

SUCCESSFUL GRAPE GRAFTING ILLUSTRATED.

Tomato Tests in 1887.

R. W. HARGADINE, KENT CO., DEL.

We planted last season on June 15th nine varieties of Tomatoes, side by side, solely to test the earliness of the different varieties. The seeds had been sown out-doors in April and the planting management and other conditions were exactly the same. The varieties were Livingston's, New Beauty, Perfection, and Livingston's Favorite, Cardinal, Optimus, Essex Hybrid, Mikado or Turner Hybrid, Early Market Champion, and Extra Early Trophy. The difference was very slight in favor of any one variety as to time of ripening of first specimens, and this difference was in favor of the dark red or purple varieties, such as Essex Hybrid, Mikado and Champion.

None of the varieties tested can lay any just claim to earliness as market varieties except Extra Early Trophy. While this did not begin to ripen single specimens earlier than most of the other varieties, it did ripen a large crop early in the season and this characteristic gives a Tomato its chief value to the market gardener. The variety mentioned seems to belong to the old Gen. Grant type, which disappeared some years ago, owing to a rust which induced a weak growth of vine. Though what passed for seeds of Gen. Grant continued to be sold by some seedsmen. They were not the true variety, but for the most part were the old Early Smooth Red variety.

The size of Extra Early Trophy is quite small and many specimens, a characteristic to a great degree of all true early market varieties. We think, however, it is a valuable acquisition to the market gardener and deserves a more extended trial. It certainly is the most promising early variety we have tested since the Canada Victor was introduced, some fifteen years ago or more.

A veteran horticulturist lately said that "enough new Tomatoes had been introduced, each claiming to be ten days earlier than any other variety, to make the seasons meet and give us ripe ones every day in the year, but the fact remains the same that the perfect early Tomato has not appeared.

Every year the query arises, "What is the best variety of Tomato for early market and for general market or for packing?" Heretofore Livingston's Perfection, though not so early in ripening a full crop as some of the inferior varieties, has met the requirements of both the market gardener and the packer better than any other, and we have without hesitation recommended it. But last year it showed a weakness of vine and a tendency to the disease known as black rot, now quite prevalent and which was generally so fatal to the Acme and later on to the Paragon. The new Optimus Tomato, apparently a near relative, of the last named shows the same tendency.

From our own experience and careful inquiry among growers and packers of Tomatoes in this the great Tomato growing region of the East, we would say that Livingston's Favorite and New Beauty and the Cardinal at present are the safest varieties, all having sufficiently heavy foliage and good keeping qualities.

An Improved Method of Manure Heating.

W. P. WARING, BELKNAP CO., N. H.

It has occurred to me to describe an improved hot bed for various purposes, and of which I enclose a rough sketch. It is virtually a manure heated greenhouse.

Cross-section of Manure Heated House.

In its construction, an excavation was made as for a regular hot-bed, three and a half feet deep, the length governed by the number of sash to be used. For width I found that in the use of 6 feet by 3 feet sash an eleven foot house was the best, giving only enough slant to run the water off readily. The sides of the pit were cut straight and square. Bricks were laid every four feet alongside on the bottom, as a foundation for the studs; these were 2 x 4-inch scantling four feet long. Double walls of the same height, having an air space of two inches, were built upon them, rough boards below the surface, and matched stuff above. A cap board for the wall of the same angle as the sash was provided. The lower ends of the sash come down over this somewhat as shown in my drawing. Rafters of 2 x 3 stuff are laid at a distance apart to accommodate the width of sash, which are laid on and secured with hooks and screw eyes, several sash on each side being left for ventilation through sliding down from the top. These are provided with fasteners securely against being blown off. Except at the ventilators, the cracks between the sash are closed on the outside with lath. The exposed wall, above the surface, is banked to the top with manure.

Inside a two-foot walk runs through the middle and between inch-board walls that form the sides of the beds. They are three feet high, with studs held in place by strips fastened to the outer walls. The ridge should, for economy of heating, be kept so low as only to allow for head room, the roof having rather a flat pitch, but not so flat as to allow the water to drip inside, as this excess of moisture is a source of mildew and rot, especially in growing Lettuce.

To heat this house manure is used as for an ordinary hot-bed, packed in two or two and a half feet in depth, and covered with six inches of good soil. For getting in the manure and soil the sash are laid aside.

During all cold nights I keep the house covered with mats, as in ordinary hot-bed management. With accumulating the sun heat, in addition to the fermenting manure, it is easy to maintain a heat of 45 to 65° at night and of course a considerably higher temperature during the day.

Such a house does not involve very much more labor in the making than the old style does, while on the whole it is easier managed. The special advantage is that while in the midst of cold weather it is risky to have the

ordinary frame open to plant, pot or water, causing injurious delay, perhaps. In this we can at any time do the work required and often succeed in getting to earlier market.

Besides vegetables, flowering plants of all kinds may be readily grown for market or for home or outside use during the summer.

Planting and Care of Young Apple Orchards.

SAMUEL MILLER, BLUFFTON, MO.

It has been said that if all the Apple trees set out in the past thirty years had lived and borne well the Apples could not all have been used. But we know they did not, nor will many that are hereafter set, unless things are better managed than in the past.

In the first place, rather than buy your trees of a tree agent, even if you believe him to be honest, go to the nursery and see that trees and varieties to suit you are got. Two-year old trees are the most suitable, with low heads, stout and healthy. Before getting the trees, have the ground ready, and that ready is of great importance. The earth should be plowed, following with a subsoil plow, for loosening the earth 18 or 20 inches deep. If not fit to yield 75 bushels of Corn per acre, manure it to make it so.

For fall planting have the ground well pulverized; if for spring setting, it should be prepared the fall before. Lay out rows 32 feet each way, dig holes two feet across and one foot deep. The trees, after the ground settles, should stand an inch or two deeper than they did in the nursery. Wait with planting until the ground will pulverize nicely. Fill the ground well in among the roots, using the hands if necessary to get them well spread out. Firm the earth well over the roots with the foot, filling in the last with loose ground. Use all surface soil to fill in the hole.

With the planting well done, if the trees were sound, there should not one in a hundred fail to grow. The tree can now be given its right start in life, in the way it should grow, by using a sharp knife and good judgment in heading back the branches in proper shape. Ever after they should be attended with a knife, and the thumb and finger; the latter mainly by pinching the shoots while small.

Crops of Potatoes, Corn or Beans can without harm be grown between the trees, for five or six years, if as much fertilizing matter is returned to the soil as the crops take out. But grow no part of a crop nearer than six feet from the trees; and even as close as six feet is not advisable.

Keep the borers out of the trees, loosen the ground around them as far as the roots may extend, and it will not be many years until there will be fruit. When they begin to bear, the ground can be set with clover, which can be mowed twice during the summer and left to rot on the ground. If the hay was to be hauled off, manure must be put on the ground to make up for the tax on the soil.

An orchard started with good trees, on well prepared land and thus cared for, can defy the driest summer if the ground is kept loose under the trees. Young trees must be protected from mice and rabbits.

Should anyone choose to raise his own trees, he will do well to take the following plan. Select seeds from sound apples grown on trees of a hardy and thrifty variety; and if of our native Crab Apples it may be an advantage. Sow these in the fall, covering an inch deep, not too thick. Cultivate well the following summer. In the fall take them up and heel in. In the spring, instead of cutting the roots into pieces, use a whole root to each graft cutting off at the crown and a trifle of the tap root. Grow them in good soil for two years, when they will be superior trees, and if planted and properly cared for as indicated in the foregoing, an orchard that will last a generation should be the outcome.

It is important to only grow such varieties as succeed in one's neighborhood. Here in latitude 38.30 we hear of the Ben Davis, ten years planted and well cared for, failing the past summer, the cause being attributed to the two last severe winters. The climate here is a trying one, as we have such extremes so suddenly. I have seen the mercury at zero at sunrise one morning, and the grasshoppers jumping thirty-two hours after under the lofty cliffs on the banks of the Missouri. This is what, in my opinion, does the mischief. While farther north they have snow that protects low plants, here we get it as low as 20 or 30° below zero, with but an inch or two of snow on the ground.

The fear of planting too many Apple trees is groundless, so long as this is done something as suggested. The population increases fast, besides people now consume but half the Apples that they will in later years when they become better educated.

Plum Culture in Western New York.

At a recent meeting of the New York State Farmers' Institute, our correspondent, Mr. Virgil Bogue, of Albion, N. Y., offered the following practical remarks on this topic:

Plum culture has been neglected perhaps the most of all the fruits we grow. We profess to be engaged in cultivating the trees, by furnishing moisture, food, and other requirements for development, but are we in fact doing the best we know how?

Too often the answer must be, No. Everyone should know when he sees his trees suffering from drought to an extent that the leaves are dropping prematurely, and the fruit drying up, that it could have been avoided by plowing and cultivating sufficient to keep a good moist surface over the roots, as is the condition of a well-worked summer fallow. No one would plant corn in an uncultivated soil and expect a crop. Much less should he expect fruit from an orchard under like treatment.

Plum trees, being governed by the same natural law as other trees, we should cultivate with a view of keeping them in as healthy and well-developed state as possible. This can best be done by thorough tillage, and by spreading on the orchard, in the early winter, what manure is to be used.

The best time to trim the Plum is in the spring, between the last heavy freezes and the breaking of the buds. It should never be done later, as a tree cannot be injured more by any one treatment than to trim when the leaves are the size of mice ears. Trimming in the fall or early winter is, for this fruit, the next worse time, as it exposes to the severe elements of the weather the inner parts of the tree.

The life of the tree, which is secreted in minute glands near the exterior, is easily killed by freezing, and the scars made by pruning are really much larger than the outside appearance would indicate. Where there are too many such spots for the tree to cleanse it becomes diseased and rotten-hearted, or hollow, as is often the case.

In the way of culture, plow reasonably deep, as early in the spring as the land will allow. Frequently cultivate or harrow until the tree has finished extending its branches, which is usually the fore part of August; then seed to rye. This will soon cover the ground and form a good winter protection, and at the same time will improve the land under the natural law that seasons following winters in which the ground is covered most of the time with snow are more productive than those following open winters.

The trees should be banked up with dirt late in the fall to protect them from mice. This earth should be removed from them early in the spring.

All trees have their diseases or insects, that are ready to infest them as opportunity presents. Among those of the Plum is for one the black knot. This can be remedied by cutting off the woody formation as it first appears, and by burning the insect.

The curculio, which has stung the fruit for many years, appears to be leaving our section. To such an extent is this true that we have no further fears of them. They seem to have been sent for the purpose of teaching, if possible, the necessity of thinning the fruit on the trees, for it is an admitted fact that if the tender varieties of Plum are allowed to bear all they would, without being thinned by insects or by hand, they would soon exhaust themselves and die. This, notwithstanding it is empowered, like all stone fruits, with a great facility for searching for its food, and will thrive well in the nursery on land that is exhausted from raising other kinds of trees.

Mina Lobata and Its Culture for Bloom.

L. W. GOODELL, DWIGHT, MASS.

This new annual climber, introduced from Germany last year, I find to be a remarkably rapid grower, with an abundance of foliage which resembles that of the Ivy-leaved Cypress Vine (*Ipomœa Q. hederæfolia*). It is indeed a relative of the last named, but entirely different in its flowers. The flowers are tubular and produced in erect forked racemes, and are at first as buds, bright-red, but change from orange-red to yellowish-white when in full bloom.

I notice several statements from those who tried this flower last year, in which failure to get it to flower are reported. My own experience with it was much the same. I started about twenty plants in March, transplanted to cold-frames in April, and planted out the last of May. They made a very rapid growth of fifteen or twenty feet, but no flower buds appeared until the last of September, when the tips of the vines were well covered with them, only to be killed by frost a few days later.

Now, it is a fact that this plant blooms and seeds freely in Germany, and there is no reason why it should not in this country if properly treated. The failure to bloom is, no doubt, owing to improper treatment of the young plants. Haage & Schmidt, the introducers, have recently sent out these additional instructions:

"In order to enjoy the beauty of this plant as early in the season as possible, success depends on cultivating the seedlings in the following manner. Having been potted off singly in small thumb pots in light, sandy soil, and being well rooted through (pot-bound), they ought to be shifted to large pots, using of course the same light soil. In these pots the plants must remain until they show their flower buds, hardening them off in the meantime; once they show these the plants may be planted out in the open ground, but also in light sandy soil, where they will continue to produce their flowers freely. If the plants are cultivated in very rich soil it may happen that they will attain enormous dimensions and produce a most luxuriant foliage, but hardly any flowers until very late."

It is to be hoped these instructions will enable us to flower it this year, for it is certainly, in other respects, a fine addition to annual climbers. Its history is quite remarkable. It was introduced into Europe from Mexico about fifty years ago, but for some unknown reason, perhaps because it failed to mature seeds in England, where it is supposed to have been grown, it became lost and nothing more was heard of it until re-introduced by Messrs. Haage & Schmidt.

The New Black Currant—Crandall.

This new Currant, which is now for the first time being brought to the attention of the public, seems to possess some remarkably good qualities. Whether, as the history of the original plant as given by Mr. P. W. Crandall of Newton, Kansas, on whose grounds it first appeared, might indicate, it is a hybrid between the Missouri Yellow Currant, *Ribes aureum*, and the Cherry Currant, a variety of *Ribes rubrum*, or not, it certainly seems to be a great remove from any form of the Missouri Currant of which we have knowledge. The last-named species is well known to vary exceedingly throughout the West, in productiveness, flowers, color, etc. Whether the Crandall is merely a variety without the mixture of any *rubrum* blood or not, it is to say the least a fruit such as cannot fail to interest the general fruit grower.

Our first impressions concerning this variety were gained from the visit of a representative of this journal to the grounds of its disseminators, Messrs. Ford & Co., Ravenna, Ohio, during its fruiting season last summer, and from a sample basket of fruit received at this office as a result of that visit. Photographs were also obtained of young bearing plants, branches, etc., and from these the excellent engraving annexed, which well portray the variety, were made.

The most striking characteristics of the Crandall as presented to our attention were its vigorous growth, in this respect being freer in all ways than the common garden Currant; its great productiveness and the large size of the fruit. As to the latter quality it may be said that berries five-eighths of an inch in diameter are not at all rare, while some may exceed this, and none ordinarily get down to the size of common Currants. In color the fruit is bluish black when ripe.

Concerning the flavor of the berries, while this may not be very marked in any particular respect, it is yet sufficiently agreeable to assure for the variety a rank among our most useful culinary fruits, for jams, preserves, etc. From its black color one would quite naturally look for the peculiar, and to many disagreeable, flavor of the common Black Currant, but this seems to be entirely lacking. Eaten in a fresh state the taste of the fruit reminded us of the Gooseberry. The berries have but few seeds, and these not disagreeable to the taste.

In its time of ripening the Crandall is a mid-summer fruit, being at its best about the first of August. The plant is said to be perfectly hardy, a fact which seemed to be clearly indicated by the vigorous growth that our representative saw in the plantation at Ravenna. One valuable quality of the plant is its immunity to injury from late spring frosts. Notwithstanding a frost in the spring of 1887 throughout Northern Ohio proved disastrous to the fruit crop generally, a plantation of the Crandall similarly subjected showed not the least bad effects on the crop from frost injury.

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THE CRANDALL CURRANT. YOUNG PLANT AND FRUIT.

Hastening the Pea Crop.

The following plan for having early Peas is in vogue with English gardeners, who are excellent Pea growers if they are anything:

Two weeks or more can be gained over the earliest outside pickings, by sowing the American Wonder under glass, for the earliest crop, in boxes of light rich soil, and transplant as soon as the frames are ready; following by successive sowings in frames for later pickings. A gain may also be had by starting a boxful in the house and transplanting in the warmest garden corner when safe from frost. The above variety seems to be particularly well adapted for forcing. Have nine inches of good soil over the manure in the frame, and when well manured, deep narrow drills eighteen inches apart are made.

Transplanting young Pea plants is an easy matter when rightly and quickly done; shake the soil from the roots, lay them in a single row in the drill two inches apart and cover carefully with fine soil. This simple plan has been found to work better than several methods that have been tried, as the strong roots with their many rootlets are easily preserved, and when carefully planted start into the fresh soil quickly, no appreciable check being given. Between the Peas may be had a row of early Lettuce sown at the same time as the Peas, and that grows quickly to a size ready for cutting, paying well for the labor involved and not injuring the Peas. Peas after becoming established require plenty of air and water. Using brush as a support will be found as advantageous here as in the field culture. Years ago a fine lot of Peas were spoiled, owing to being planted in shallow soil over dry, moldy manure, which no watering could change. The lesson was well learned and Early Peas have ever since been provided with short moist manure into which they can root.

Radishes and Their Culture.

Amongst garden vegetables none are more widely acceptable than tender, sweet, well-grown Radishes, and it is the ambition of every good gardener to get not only a very early supply but a supply more or less steady the year round.

Throughout a constant crop of crisp, delicately flavored roots should be the aim. The earliest will be had from a hot-bed or from under some glass protection. It is seldom we grow a crop of Radishes alone, but secure all we want from planting with other crops.

One mistake is sowing the seed too thickly. Under such circumstances when the plants come up they are a mat at top and bottom, and when this is the case useful roots are never formed. Thinning out some of the plants as soon as they can be handled is one way of avoiding this, but it is a wasteful way; the better plan is always to sow thinly. One seed every inch or two will give a much finer crop and better results altogether than a close sowing. Many doubtless wonder why their Radishes do not all attain size, but allowing them to grow too close together is as a rule the cause of this.

In making up a special bed for early Radishes, a rather shallow bed of fermenting material is sufficient; about 2 feet in depth is enough, and 6 inches of soil should be put on the top of this. They grow fastest early in the season in a moderately rich sandy mixture. The seed should be sown broadcast, very thin, and it should not be covered more than a half an inch deep. The earliest seed may be sown in hot-beds in February, and throughout March seed may be sown along the base of a south wall or in any sheltered sunny spot. Here the rule as to thin sowing should also be observed; in fact, this must be kept in mind throughout. When the little plants appear at first in the colder months of spring a slight protection will favor their free growth. A few branches or the like is all that is needed.

From April onwards throughout the summer Radishes will do most anywhere, their only requirements being a firm, rich, cool soil. Without this, especially in summer, the roots will become hot and stringy before they are well developed, and the period of their usefulness will be short.

In general culture some may prefer having the seed in rows; others may sow broadcast, and good Radishes may be had in both ways. At no time should the seed be put more than half an inch below the surface, and the soil should always be trodden firmly over it, as this induces the plants to bulb quicker and better than when in loose material. Dates of sowing and quantities to put in at each time cannot be given to suit all; every cultivator must be guided by his own requirements.

We are never without Radishes; our rule is to sow a small quantity of seed every three weeks from the middle of February until August.

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579. **Palms for Room Culture.** The following succeed well in an ordinary room temperature: Chamærops excelsa, Corypha australis, Phœnix reclinata, P. tenuis, Rhapis flabelliformis, Seaforthia elegans, Sabal Blackburneana, Pritchardia filamentosa and Areca rubra. Cool stove kinds are Cocos Waddelliana, Daemonorops Palembanicus, Areca lutescens, Kentia australis and Latania borbonica; the latter is very useful for warm rooms. The chief cause of the foliage becoming withered at the tips is from their being grown in a warm house, moist and close, which renders them soft, so that they cannot bear the dry air of rooms. The plants should be grown as hard in texture as possible, confining them to comparatively small pots and feeding with liquid manure, soot water imparting a most desirable deep green color to the leaves.

Notes From a Rochester Fruit Farm.

BY CHAS. A. GREEN.

To-day, December 14, I have planted a lot of Apple, Pear, Plum, and Chestnut trees. It has been a remarkable season, and all hands have been at work out-of-doors up to this date. The Apples and Pears are for a specimen orchard, and embrace one tree each of all the varieties we can get, about 150 varieties. These are planted ten feet apart in the rows, with rows 100 feet apart, giving ample space for cultivated crops between. Two men plant 200 trees each day, in well prepared soil.

Each tree had a common printed label on when planted. This I removed to-day and attached a zink label, with a narrow end wound around the tree. Zink makes the most enduring and satisfactory label, the writing becoming more and more distinct years after it is written. The wind does not wear it out, it does not rust or fall off. I purchased 10 pounds of Zink at 8 cents per pound. It cost 60 cents to get it cut into labels, making about 1,000 labels, thus costing about 20 cents per hundred.

Not wishing to rely wholly on labels, I record the position of each row and tree in a record book. Fruit growers should keep such a book. They will find it serviceable.

After the trees were planted I followed with a sharp knife to prune. Some people are particular about the form of heads of trees as they come from the nursery. This is well if the trees are to remain low branched, with no cultivation after coming into bearing; but if it is intended to cultivate the ground after bearing the branches are too low as ordinarily trimmed in nurseries. Therefore, from these trees that I planted I cut off all branches but the one most nearly upright, leaving simply a straight whip, then cut back the leader a little if too high. If this pruning is not done at planting it must be done in after years, which is a loss to the tree: the longer delayed the greater the loss. An orchard planted ten years ago has been continually trimmed, cutting out the lower branches to get them out of the way of teams. Even if they do not appear to be too low the first ten years they will become too low later, for when heavy laden with fruit the limbs are weighted down low, and, growing in that position, remain there. All who plant fruit trees should bear this fact in mind.

The top of the straight, whip-like tree as planted contains numerous buds which will quickly form another top higher up than the top removed, and as there are fewer buds to push into growth the top is formed rapidly. Please note this fact, that at planting pruning is not imperative. All cutting can be omitted and the trees live. Therefore, if you doubt your ability to make a new top do not cut it until later, when some skilled person can do it. Peach trees are nearly always cut back to a whip at planting, but other trees are often neglected, the cause for heroic cutting not being so apparent, and not always being necessary.

NUT TREES. We are planting Chestnut and Black Walnuts, believing that there is money in such planting. While the nuts are the main inducement I do not doubt that the timber will give a good profit. We desire to make our farm take care of us in our old age. I can see no better way to make it profitable than to plant fruit orchards, Apples, Pears, Plums, Cherries, and nuts. But little planting of nuts is done here. People have not yet become aware of the profit from such trees. Consider the product of one Sweet Chestnut tree, then of 100 or 1,000. While Chestnuts spring up naturally on sandy soil, I have seen them bear well on clay or loam.

PROTECTING GRAPE-VINES. Our men have nearly completed trimming and laying down the Grape-vines. They bend them down carefully, and cover with soil to hold the vines close to the earth. We do not deem it necessary to cover all of the vine, except the Duchess, a noble variety, but so tender as to give no fruit here if not covered. Strawy manure or earth answers the purpose. Concord and other hardy varieties usually come out safely without covering, but occasionally they are injured, and the loss of one crop would pay for protecting many years. If such kinds are simply weighted down with fence rails the object will be secured.

The first few years that Grape-vines are planted they need banking up with earth, or covering lightly with strawy manure to protect the roots, which are then near the surface and not so tough as they will become with age. It is an easy matter to start a vineyard, and everyone is surprised at the low price they can sell at with profit. Concords at two or three cents per pound are a good paying crop. The Concord has not yet been supplanted by any new variety.

ANGOULEME PEAR. While this variety has given the largest profits in past years in Western New York, we find it unsatisfactory as a dwarf. On our soil it is difficult to keep it in dwarf form, as it sends up shoots 2 to 3 feet long in one season if not cut back, and, without attention, after a few years, is so high as to be swayed by the autumn winds. Anjou, Tyson, and others require but little pruning to keep them in shape, while Angouleme keeps one cutting continually, and yet is too rampant. It blossoms prodigiously each spring, yet bears but little fruit, and that often imperfect. Flemish Beauty and Vicar yield nobly on dwarf trees. We double work Winter Nellis, Souvenir and some others, in order to get them on dwarf trees, as they do not take well to the Quince. Bosc is a noble Pear, having one drawback, slow growth in the nursery, which makes the trees scarce and high priced. Winter Nellis, Josephine, and Giffard the same defect. Our Kieffers were the most handsome of all the past fall, and were selected first by buyers. People stopped the wagons to buy pocketsful. The quality was not equal to others in the same load. It was the appearance that sold them.

HOW TO TIGHTEN WIRES ON GRAPE TRELLIS. While visiting Messrs. E. & J. C. Williams, at Montclair, N. J., last fall I noticed a novel method. It is simply an iron bolt 4 inches long with square head, sharp point and sharp thread, made for bolting wood to wood, no nut being attached, selling at $1.50 per 100. A hole large enough to admit a trellis wire is drilled through the bolt near the head. The end parts of the trellis being well braced, the wire is fastened to one post and strung along the ground to the other end. A hole a little smaller than the bolt is bored in the post at the desired height, and the bolt inserted. The wire is passed through the hole drilled in the bolt, and drawn tight, then an assistant screws the bolt a turn or two into the post, which clinches the wire, which is then cut, and successive turns of the bolt by the wrench makes the wire as tight as desired. It is but a moment's work to tighten or loosen the wires, a desirable feature, as in winter the wires should be loosened, as they contract, and in summer tightened. Nothing looks more shiftless than wires of Grape trellises left flopping about, or shiftlessly fastened at ends, with end posts half pulled over, as is the case unless the wires have some device as this, and the posts are well braced.

PRUNING PLUM AND CHERRY. More care is required in pruning Plum and Cherry than other fruit trees. All trees should be pruned when young, so as to prevent the removal of large limbs, which removal is always injurious, but with the Plum and Cherry the removal of large limbs is often fatal, and always more injurious than with other fruit trees, as the wounds do not heal so rapidly, and often not at all; thus often disease steps in and the trees die. I once cut off a large branch of a thrifty Plum tree and grafted it. The graft grew and the next spring I cut off all the remaining natural branches but one. The graft grew rapidly, and the third year bore an immense load of Plums, nearly as large as hen's eggs, and so close together the fruit touched everywhere. It was a wonderful sight, almost a solid block of Plums; but next year the tree died. The wounds had not healed and the bark was dead for several feet below them.

Bleaching Evaporated Fruit.

FRED. W. CARD, BRADFORD CO., PA.

A recent writer in your columns condemns the practice. If it is such a short sighted method and there is such a prejudice against it as he claims, why is there no demand for Apples without bleaching? Those who evaporate fruit would gain nothing by bleaching if just as good market could be found for the unbleached.

To show something about this I will quote the words of a Chicago commission firm written to me under date of September 26, 1887: "We cannot sell evaporated Apples *without bleaching*. We do not know anything about the process of unbleaching you speak of." I have but little doubt that of two samples made from the same kind and quality of Apples, equally well put up, one with bleaching the other without, and placed on sale at the same price, most persons would purchase from those that were bleached.

When I am compelled to ask at the table, as I have been, whether the sauce or pie is made from evaporated or fresh Apples, I fail to see wherein the flavor is materially impaired. By being left too long in the bleacher the fruit may be injured, but if properly done and left only long enough to set the color, I think it has no bad effect either on the flavor of the fruit or the health of the consumer.

I am not a physician, and therefore not qualified to discuss the effects on the system, but as sulphur is simply a mild cathartic, and I believe in many cases an excellent blood purifier, I do no believe it can cause any injury. The sulphurous acid produced by the burning sulphur, as well as being a useful bleaching agent, is a powerful antiseptic, destroying fungous and bacterial development. Meat subjected to its action can be preserved from putrefaction for a long time. My bleaching is done after the Apples are sliced, and as they are in the bleacher only a very short time the amount of sulphurous acid which can be absorbed by the fruit is very small. Considering the fact that there are very many diseases in which this agent, inhaled as a gas or taken internally in the form of sulphites, is found very beneficial, I see little cause for alarm.

Plum Talk from Northern Maine.

E. W. MERRITT, HOULTON, MAINE.

Some of my Plum trees set in spring of 1885 bore five quarts in 1886, and one peck in 1887. In the orchard there are Green Gage, Imperial Gage, Lombard, Magnum Bonum, Columbia and Mooer's Arctic, and the latter has outborn any other two.

The Arctic may or may not be called curculio proof, for some of the fruit is stung. Some claim that many of the curculio eggs are drowned, the Plum being very juicy. As it is, it sets such a superabundance of fruit buds that sufficient are left for a crop, and thus it is said to be curculio proof.

The curculio is sluggish and prefers to ascend the same tree where it was reared. Perfectly clean cultivation with horse and

hoe is necessary, and when the Plums begin to fall the ground should be entirely free from weeds, and raked smooth in order that the Plums may be readily picked up and destroyed. This I find the most inexpensive and effective remedy. All will not be destroyed, but enough to secure the crop of any fruitful variety.

We plant Plum trees 8 feet apart each way. In order that the trees may be laid down and protected, first plow a deep furrow and spread the roots two ways, that is each side of the tree, then trim the limbs fan shaped. Then by removing a shovelful of dirt the tree may be bent down and pinned flat to the ground in the fall, a thing necessary here, as the thermometer goes down to 40 every winter, and last somewhat lower. We have no Plum, Pear or Cherry that will stand uninjured through these winters, as the snow comes on early; those trees that are laid down are soon covered with snow, which is all the protection they need. I think this would be a benefit even without snow, as it is warmest near the ground.

We graft the Plum on one year old seedlings, but where it is necessary to transplant these I should not advise grafting until the next spring, as otherwise the shoots will be weak and crooked unless on very rich ground. All the native and European Plums do well on Canada Plum stocks as far as we have tried. We whip graft, using a scion of two buds, and the grafts often made a growth of from four to six feet. We have not been able to bud on the Canada but have made 95 per cent grow when grafted.

I have never seen a Plum tree proof against black knot. I will not attempt to say what it is, but have reasons for believing that it is brought on by acid manures, sawdust, chip dirt, rotten wood and often is increased on poor, dry, sandy, also wet, soggy and putty-like soil. A well stirred, warm, mellow soil with abundance of ashes, bones and a supply of manure and salt will practically banish it. One peck of hardwood ashes, one pint of salt and a handful of lime applied three or four times a year is very good; when black knot appears cut it out with all the curly wood, if it takes half the limb; it will soon heal if given the above treatment.

Notes From an Ohio Vineyard.

MATTHEW CRAWFORD, CUYAHOGA FALLS, O.

The first Grape to ripen was the Jessica, which was in good eating condition at the middle of August and fully ripe at the first of September. It originated in Canada and has proved hardy thus far. It is a good grower, making an abundance of firm, short-jointed wood. There was a little mildew on young vines, but no rot has yet appeared. It is a very prolific bearer and seems to be able to carry a large crop to maturity and ripen its wood at the same time. The bunch and berry are only medium in size, being little larger than the Delaware. It may remain on the vines a long time without dropping from the stem, or wilting. The quality is very good; indeed, almost equal to the Delaware, and without a trace of foxiness. One person thought that it was almost too sweet. Chas. Carpenter says it is the best white Grape he ever tasted. I think it is the best white variety for home use yet introduced. Not large enough for market.

The Early Victor ripened very soon after the Jessica. It is from Kansas and is a rampant grower, healthy, hardy and prolific. The bunch and berry are of medium size and very attractive in appearance. The quality continues to improve for some time after the fruit turns black, until it may be classed as one of the best black Grapes. Its season is short. If left on the vine long after maturity it shrivels badly.

Potter's Early is one of the Concord class, but is sweeter than that variety ever becomes. It originated at Providence, R. I., and is a great favorite in that locality. It is little known elsewhere. I planted three large vines when it was first introduced, and they have made a luxuriant growth, and fruited three times. In wood and foliage it resembles the Concord, but the leaves are more russety and turn yellow much earlier. It is very early, but may remain on the vine a long time without dropping or wilting. The berry is of the size and color of the Concord, but the bunch is a little smaller. It is perhaps the sweetest of all Grapes and has a very little foxiness.

The Worden may be classed as an improved Concord, but a week earlier. Its leaves turn yellow some time before those of the Concord, and it is less liable to rot. Too much can hardly be said in its favor.

The Lady is one of the most valuable of the white Grapes and perfectly hardy. The cluster is of medium to large size, with large berries crowded together quite closely. The skin is thin, and sometimes cracks in a wet time. It has a great quantity of sweet, rich juice of which bees and wasps are very fond. While it is not as good as the Jessica, it is better than the Pocklington or the Niagara, about which we have heard so much. It is quite early, and in ordinary seasons may be left on the vine long after maturity.

Pocklington is another of the Concord class, healthy and reliable. I am not aware that it has been winter killed anywhere. It has large clusters and its yellowish color makes it quite attractive in the market. The quality is almost as good as that of the Concord, with a little more foxiness.

The Niagara is much like it, but its clusters are rather larger, and it is hardly as foxy. It is a favorite in the market, and usually brings a good price. It has not fruited with me, but I have seen it in perfection, and think well of it for market.

Two vines of the Empire State fruited with me this season. They were unpruned and unprotected last winter, and some of the buds seemed to have been weakened in consequence. They received no summer pruning this season, and as a number of strong canes have grown from near the ground, the fruit was retarded somewhat in ripening. The clusters were of medium size and the flavor very good.

Six vines of the Woodruff Red fruited for me this season for the first time. For vigorous growth, hardiness and splendid foliage this variety is not surpassed. The fruit was never claimed to be very good, and I was expecting it to be inferior. For this reason I made no use of last year's wood. Hereafter every bud shall be saved. It is quite early in ripening, and is so large and beautiful that everyone wanted to taste it. No one found fault with the quality, but very many spoke of it in the highest terms. It is the brightest red of any Grape I have seen. None of the clusters were very large, though of fair size. The flavor is very sweet and rich, with a little foxiness that nearly every person relishes. It has quite a large, hard center that never becomes tender. Perhaps it would have done so if it had more time. This is its main defect. Its attractive appearance will cause it to sell readily, and its flavor will please nearly all who taste it. Its habits of growth and productiveness will make it a very safe variety to plant for either home use or market.

The Isabella has been so completely superseded by the Concord that many are unacquainted with it. It is when well ripened of better quality than any of the Concord class. The vine is an excellent grower and bearer, and it is one of the best keeping varieties we have. It is jet black and has a bloom resembling lampblack. Its stems never become woody, and when perfectly ripe they are so tender that they are easily broken, and one feels like carrying the cluster in his hand rather than trusting the stem. If allowed to overbear it fails to ripen both fruit and wood. I have known a vine to produce over 2,000 pounds in a single season, and most of them were of good quality and well ripened. It occupied several trees, was never pruned except with the scythe when the shoots hung in the way. This is the way for inexperienced persons to treat any variety. Vines seem to need brush to climb on. I have a couple of Isabella vines that I care for because the fruit is a favorite with so many.—Ohio Farmer.

Growing Strawberries for Large Yields.

MR. J. B. ROGERS BEFORE THE MICHIGAN HORTICULTURAL SOCIETY.

This subject divides itself into two classes. *First*—A great yield, having less reference to the large size of the individual berry; and, *Second*—Seeking large size in the individual berry, with less yield in the aggregate. The culture will necessarily have to be treated separately in the first stages.

First class: Select plants for setting that have never been forced to their greatest yield; of a variety possessing strong, natural vigor, inclining to form numerous fruit crowns, and capable of withstanding high feeding. Set as early in the spring as the soil is in fit condition, five feet between rows, three feet in the row. Allow the plants to make matted beds. Late in the fall, and just before applying mulch between the rows, remove all feeble plants, as well as those set in the spring to form the bed; then thin those remaining to allow room for the developing of the plant and fruit next spring.

Second class: Select runners from plants that have never been forced to their full fruiting capacity, of a variety having strong, natural vigor, and capable of withstanding high feeding.

TIME OF SETTING: This varies with the variety. All that is requisite is sufficient length of time to elapse before the severity of the weather causes plant growth to cease for the development of one or two good, vigorous fruit crowns. Allow any runners starting to make root, and late in the fall, just before applying the mulch between the rows, remove all but the plants first set. Set plants two feet between rows, and eight to ten inches between plants in the row. The culture of this class is in single stools, not cutting runners; rather removing all runners taking root in the late fall. The remainder of my remarks will apply to the culture in general.

PREPARATION OF THE GROUND.—Select land capable of being finely pulverized, moist, not wet, inclining to be heavy—that is, such as will become firm about the roots. Special care should be taken to have an abundance of plant food well mixed with the soil. Well rotted cow manure, at least one year old, is one of the best forms of plant food. Spread on the surface of the land at the rate of one ton, or 25 bushels to each 12 feet square of surface, this being at the rate of 75 cords of manure to the acre. This may seem to some almost wasteful, yet the demand of the fruit upon the food in the soil must be met.

Whatever manner is employed should be of such a nature as to make a slow, vigorous plant growth to perfect the best possible fruit crowns, not only for fruiting the next spring, but also to withstand the rigor of the winter. For early spring setting, prepare the soil the fall before, to allow time for the plant food to become incorporated in the soil. For later set plants, prepare early in the spring, and raise a crop of Peas on the ground, then prepare for setting plants.

CULTIVATION.—As soon after setting plants as the new leaves begin to grow in the crown

of the plant, fighting weeds should commence. Never disturb the soil deeply, use the garden rake mostly. Place runners in position by hand, loosening the soil a little where the runners are to be struck.

WHEN TO CEASE CULTURE.—By culture is here intended any disturbance of soil in general, to interfere with the so-called fruiting roots. Within from two to four weeks before the final setting in of winter a new series of roots designed to feed the fruit commences to form. These grow near the surface, hence it is safest to abandon culture except on the surface fully two weeks before time for the early frosts.

AS TO MULCH.—Apply liberally between rows as soon as the first severe frosts take place; this acts as a protection to the fruiting roots. At the setting in of winter cover the plants lightly to protect the foliage from the winds and sun.

CARE IN THE SPRING OF FRUITING.—Do not disturb the soil except pulling of any weeds appearing while yet small After all frosts remove the mulch from over the plant, allowing it to remain between the rows.

Foreign Grapes in the Greenhouse—Growing in Pots.

Most amateurs possessing a light and heated greenhouse or span-roofed pit might easily furnish their tables with some delicious foreign Grapes by adopting pot culture.

Vines in pots in large garden establishments are often relied on to furnish the very earliest supply of forced fruit. But the process of growing the vine quickly into a condition strong enough to bear a satisfactory crop of fruit in a pot is one that demands much attention, the all-important matter being thorough maturation of the wood. If this essential is not attained, failure is well nigh certain.

Under these circumstances, therefore, it is advisable with the amateur who may wish to try his hand at pot vine culture to purchase fruiting canes in the autumn from a

FOREIGN GRAPE-VINE GROWN IN POT.

reputable nursery where their culture is made a specialty of, selecting those which have firm, brown, and well-ripened wood, and showing prominent and well-developed buds. The best sorts to purchase for the purpose in view would be of free-bearing kinds, such as Black Hamburgh, Royal Muscadine, Foster's White Seedling, Madresfield Court, Royal Ascot, and Alicante. Muscats rarely succeed well in pots, therefore they had best be avoided.

October or November is a good season to lay in a stock of canes from the nursery, and as very early forcing is not contemplated, they may be wintered in any house or pit that admits of the exclusion of severe frost, and great care must be taken that they do not become over-dry at the roots, for although the vines are in a state of rest, still great injury will surely occur if this matter is neglected.

Having previously shortened the canes back to about 9 feet or 7 feet in length, about the first week in March will be a good time to introduce them into the house or pit intended for their culture. They will not require re-potting, but should be rather deeply surface dressed with turfy-loam and crushed bones, and receive a thorough soaking of tepid water at the roots. If a bed of fermenting material, made of leaves and manure well mixed, is at command the pots may be slightly plunged therein—but if not available they do very well stood on the stage or floor of the house. The canes should be allowed to hang down at the points to encourage the buds to break uniformly. When that stage is reached they can be fastened to the training wires on the roof of the house, or be wound round some strong stakes in the manner shown in the accompanying illustration. The treatment as to temperature, ventilation, thinning the berries, etc., is precisely the same in all its details as that of the ordinary grapery. Pot vines, of course, demand great attention to watering, and when the fruit is swelling they will consume large quantities of liquid stimulant—that made from cow manure and soot being as good as anything. Pot vines when grown wound round stakes are often used with good effect as an ornament, when the fruit is ripe, on the dining-room table or sideboard.—Gardening Illustrated.

Fertility in Vegetable Gardening.

WM. H. YEOMANS, TOLLAND CO., CONN.

In the growing of all crops there should be such an amount of the various elements entering into their growth as may be necessary to carry them to a fairly reasonable perfection. If this is a necessity in the case of ordinary field crops, when it comes to the production of vegetables, such as are satisfactory as to size and quality, the necessity becomes very much increased.

No real success can be hoped for in the growth of vegetables without the use of large quantities of manure, supplemented by a liberal use of commercial fertilizers. Vegetables may attain fair size upon a moderately rich soil, but inasmuch as their growth was only moderate, continuing through the season, their quality is seldom satisfactory. Such are usually coarse, stringy and of strong flavor.

There is little danger of manuring a soil too heavily for vegetables, and when grown upon a soil that is rich in the elements of plant nutrition the growth is rapid, maturity is reached early and the character is tender, sweet and juicy, just such as is desirable either for home use or for market. Upon every farm the point should be made to use all fertilizing material that is frequently allowed to go to waste. By the continual saving of this and composting it, much valuable fertility will be accumulated and of a character just suited for the garden.

The use of house slops in the garden will add no little to the fertility of the soil and in such form as to be assimilated to the plant immediately. Chamber slops possess an unknown and unappreciated value, and should be appropriated for use in the garden. They may be cast upon the soil during the growing season, and also during the winter. It is said that a farmer grew quite a patch of Onions where no other fertilizer was used than the slops from the chamber.

Ordinarily there is not sufficient care

HOLLYHOCK—CRIMSON JACKMANII.

exercised in saving nor in applying fertilizers to the vegetable garden. Success cannot be hoped for without—a fact that farmers should be quick to acknowledge, and by which they should measure their actions.

Hollyhock—Crimson Jackmanii.

What Mr. M. A. Hunt, of Terre Haute, Indiana styles a much improved Hollyhock is shown in the above engraving. It is called the Crimson Jackmanii, and is said to stand unrivaled for beauty of bloom and majesty of growth. No doubt the Hollyhock is in the way of again becoming much more popular with gardeners than it has been for some time past, as it certainly deserves to do. Believing such to be the case, it is a pleasure to call attention to any marked improvement in this grand genus of summer flowering plants.

The flower of Crimson Jackmanii is described as being of a bright crimson color, very large, perfectly double, and a perfect rosette, which in elegance of shape rivals the Camellia. It is said to have, moreover, a longer stem than is usual to these flowers, a point which should be decidedly in its favor as a bouquet flower. The disseminator of the variety informs us that he has cut single blooms of it which measured four and one-half inches through.

As a decorative plant for backgrounds, for arranging in clumps on the lawn, or for enlivening the shrubbery border which begins to fail in its profusion of bloom about the time the Hollyhock season of flowers opens, the Hollyhocks as a class possess special value. The richness of the colors, the conspicuous arrangement of the flowers on the upright stalk, the large handsome leaves and the general stately bearing of the plant as it towers above the majority of its neighbors, offer an array of good qualities not elsewhere to be found.

Nor is the culture of Hollyhocks difficult. The plants delight in a rich soil; to be occasionally divided and reset in the fall, and a slight protection given during winter. Plants from seed sown in the spring or summer bloom the second year, while if it be sown as early as January or February in heat, and the plants well brought on, they will sometimes bloom the same year.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

IS APPLE GROWING OVERDONE?

Yes, as they are generally grown and cared for. No, if properly grown.

The same time given to an Apple orchard that is given to an acre of Wheat or Corn that brings the same amount of money gross will make an Apple orchard the most paying crop grown by the farmer. Proper trimming, spraying with poisoned liquid and proper cultivation with the right kinds for each section will make orchards pay.

The Yeomans, of Wayne Co., in this State, gathered from their orchards the past fall forty thousand bushels—most of which, we believe, were evaporated, and probably sold on an average at not less than 10 cents per pound, which would net at least 40 to 50 cents per bushel.

We had an orchard of about 200 trees, from which we gathered 2,000 bushels. These were all shaken off and evaporated, and as help was scarce they were run through without trimming, and sold for an average of 8 cents per pound, which, with dried skins and cores, is 40 cents per bushel.

There is an old saying, "fruit trees are growing while we sleep," and now that help is getting so scarce, high and independent, the more a farmer can plant that brings crops without so much labor the better. Trimming and feeding with manure may all be done in the winter when time is plenty farmers having little to do.

Our orchard of 200 trees occupies only about eight acres of land and on that land we have had crops ever since we set the orchard. Now, if any one can name any farm crop that will bring the money from the same amount of land with less trouble and expense (the crops in the orchard have more than paid the expense), we would like to know what it is.

Next spring we propose to plant out one thousand trees of the Ben Davis alone; with all of our experience it proves the most profitable of all, making as it does most beautiful white fruit, and hanging on the trees till freezing weather comes, hence one can take his own time in gathering. The trees begin bearing young and yield almost every year a wonderful crop of the finest fruit we have ever grown. Fifty young trees of this sort that we had in bearing the past season were the admiration of all who saw them.

The wood is willowy and tough and the tree as hardy as a live Oak. We shall plant them out one rod apart, and as they begin bearing so young this gives a large amount of fruit from a small space of ground while young, and when trees begin to run their tops together, cut out every other row for wood, which can be sold for a high price to manufacturers if kept well trimmed up, so as to make plenty of body. After these rows have borne two or three years then cut out every other tree, which leaves the orchard two rods apart. A still better plan for the farmer, however, is to set rows along the road and all around the outside of his fields. These get plenty of sunshine and better soil for the same number of trees.

STRAWBERRIES UNDER GLASS.

We have had many inquiries as to forcing Strawberries, and from our own experience carefully endorse the following clipped from the American Garden, and would add that the perfect blossum or hermaphrodite sorts are far preferable.

When the first runners are formed by the parent plant in the open ground they are placed in 2½-inch pots and allowed to root; the runners beyond the pot are pinched off close to the potted plant. When thoroughly rooted the young plants are taken up and the runners cut off close to the plant. The young plant is then removed to an airy, shady locality and given plenty of water, the pot being set on boards or flat stones to prevent worms from getting at the roots.

When the plants have been in the pots for about three weeks they must be shifted to larger pots—6-inch generally—placing in each pot stones or crocks for drainage; this is important, for, as a rule, unless thorough drainage is given the soil becomes musty and sour naturally, to the detriment of the plant. After removal to the larger pots they are plunged into the open ground to the rim and allowed to make a vigorous growth up to within a few weeks of removing to the forcing-house. Water well up to this period, then withhold water, unless it is necessary to give an occasional sprinkling to save from drying.

When an early crop of fruit is desired the plant may be removed to the forcing-house early in November, plunging the pots into the soil.

The plants must now receive the best of care, regular waterings being of the most importance. Prevent the plants from being soggy by too much water. The temperature of the house should be kept at about 70° to 75° during the day and from 55° to 65° at night. While the plants are in bloom it is a good plan to admit as much air as can be had without materially lowering the temperature. After bloom and before the fruit begins to ripen is the critical point in their culture. Water should be given in sufficient quantity to prevent the leaves from wilting, but not after the fruit begins to turn, unless the foliage is in danger of wilting. We have found an occasional application of liquid manure very beneficial while the fruit was in the process of ripening.

Of course, if it is desired to have a succession of fruit, all of the plants must not be taken into the house at one time. Those not placed in the house for ripening should have quarters in a cool, dry place, where frost cannot reach them, until wanted. By taking out a lot every three weeks a succession of fruit may be had.

For forcing, a house of the lean-to style is preferable to any other, as by its use the plants may be brought nearer the glass and, as a consequence, the fruit ripens quicker and much more evenly. Still, an ordinary greenhouse or propagating house may be used to good advantage.

WORK FOR THE WINTER.

Trim out old dead wood of Raspberries and Blackberries, and shorten in last year's growth so that canes will stand four to five feet high, owing to stockiness; also cut back all side branches at least one-half to two-thirds.

Get boxes a foot square, and covered with oiled sheeting, for covering over early transplanted plants to protect from cold spring weather and frosty nights. A few of these boxes for Tomatoes, Cucumbers, Melons, etc., will give a supply of the earliest vegetables for the family.

Grapes may be trimmed this month, if not done before, although we prefer trimming earlier, or about the time the vine is in full leaf.

There is no time that Strawberries suffer more freezing and thawing than in early spring. So that mulching with straw or leaves should be attended to at once, simply putting on sufficient to cover plants and ground from sight. We were asked if we ever put new-made manure on Strawberries. Certainly; and this is the best thing to do, scattering it evenly over the ground.

Grape, Currant and Gooseberry cuttings may be made now, and tied in bunches—say three eye cuttings—and placed in boxes of sand or damp sawdust till setting time in the spring.

Get the cultivators, hoes and all kind of implements fixed up now, and not have to stop in the drive of spring work to do it.

Save your coal ashes, and mix to every bushel three to four quarts of salt, and put around each tree a half peck to a peck. It is also excellent to scatter broadcast under all fruit trees.

Gather up all bones that can be found, and, after being broken or ground, dig in around the grape vines or fruit trees. Nothing is more lasting or beneficial.

We find nothing more beneficial for keeping Apples fresh and crisp than dry, fine-sifted coal ashes. It absorbs all moisture, and where this is done decay or rot is almost impossible.

Watch closely the young trees, that mice or rabbits do not girdle them. One of the best preventives is to bank earth up around the trees, and another is to tramp snow around them right after it falls, as mice work under the snow close to the ground, and the hard-packed snow prevents this. If young trees are girdled close to the ground by mice, they can be saved by banking up early in the spring with earth above the girdled part.

Haul leaves from the woods to the barnyard and stables to be used to absorb, and save urine, which is the most valuable of fertilizers. If leaves are not to be had, get sawdust or tanbark for this purpose.

Nursery trees should be trimmed up now.

If you have a garden of heavy soil where you cannot grow Radishes, Beets, etc., with success, draw on clear sand to a depth of two inches, and spade or plow this in in the spring.

It is essential, if you would be successful in harvesting Raspberries with the new patent harvester, that all old wood be cleaned out, and the ground made smooth and even under the bushes to push the harvester along easily.

HINTS FROM MY OWN EXPERIENCE.

Manures. Of all we have tried give us well-rotted barn-yard manure for fruit trees, and for Peach trees wood ashes. We have always noticed where wood ashes were freely supplied to Peach trees that no borers troubled them.

Lime scattered over the soil is beneficial to Apple trees. In localities where Cherry trees grow too fast and do not fruit, seed down.

Removing Large Limbs. We cannot recommend cutting off large limbs to fruit trees at the season when the sap flows freely, unless where trees grow too rampant and rapidly.

To decompose bones, put them in unleached ashes in alternate layers and in one year's time they will be completely decomposed.

Asparagus. It is not well to allow Asparagus to seed; it should be cut before seed ripens.

When a Peach orchard gets well under way it should have the entire use of soil. A good plan: sow rye in August and plow under in spring.

Shading bodies of trees with boards through winter will prevent bursting of bark.

To prevent mildew in Apple trees, trim out well.

Grape Rot. An old Grape grower in Virginia informed me last fall that the past two seasons had been the worst he had ever known for Grape rot, and he attributes it to the wet seasons. Our advice is to plant on high, dry ground. In a Virginia plantation Grapes on two rows near a rapid flowing stream rotted much less than the same kind further away from the stream.

Oiled paper sashes for forcing beds can be used, if carefully protected. Simply take boiled linseed oil with plenty of some kind of dryer mixed in and put on two good coats. Thin sheeting is stouter and better.

Pear Blight. A writer in the Country Gentleman claims he has checked and stopped Pear blight by thorough pruning at time of blight. This only confirms our experience in stopping blight by slitting the limb and body on one side from the blight down as quick as blight is seen.

Blanching Celery. A correspondent writes: "Why is it I can't get nicely blanched Celery? It will be rusty and unbleached." Just as soon as the stalks begin to drop over on the ground the earthing up process should commence, and this should always be done in dry weather, when the stalks are perfectly dry, for if compressed together when wet and banked up a dingy rust on the stalks will be the result, and, too, great care must be exercised to prevent earth from dropping between the stalks when earthing up. The stalks must be held close together when banked up and the earth packed quite firm.

Rhubarb Growing at the South. A correspondent living near Charleston, S. C., asks why he cannot succeed with Rhubarb; that he has cultivated it in different ways, mulched and manured heavily, and yet without success. Our son at High Point, N. C., informs us that it is not grown there successfully. Complaint is made that the roots decay and rot. Perhaps the soil where grown may require a thorough drainage. This may prevent roots rotting, and then if ground is well fed and mulched it may succeed.

Red Raspberries, South. It is quite remarkable that the Red Raspberry does not sucker more in the Virginia soil than it does. We were told that it will run out in a few years, and that plants have to come from a more northern section. We think, however, if the soil is well drained and worked and fed with manure, there will be no trouble in getting all the increase of plants wants.

Strawberries on Ridges. It will not do to set out Strawberry plants on ridges, except on low, wet soil. As a rule set on level ground and they will get ridged up enough in the course of a few years,

Nycotyl as an Insect Destroyer.

W. FALCONER, GLEN COVE, N. Y.

On page 64 I find a statement that Nycotyl "will not injure the tenderest flower." But it will. Used in moderation and with discretion it is a cheap, convenient, effectual and safe insecticide so far as aphides and thrips are concerned, but like tobacco in any form, of no avail at all against red spider, mealy bugs or scale.

Nycotyl vapor has been used as an insecticide for the past twenty-five years, but not so generally as it has been of late. The way in which we commonly use it is by steeping Tobacco stems in the evaporating pans on our hot water pipes, scattering stems between the plants, under the stages, along the pathways or elsewhere where convenient, and moistening them. The most effectual and quickest way, but by far the most dangerous, is to spread some moistened fresh stems on the warm pipes.

The vaporizer recently illustrated in your columns is a capital thing for small greenhouses or frames, but I don't know that it is any better than a lamp set under a shallow pan. Where tobacco stems are so very cheap and plentiful as they are here, we haven't much use for complicated vaporizers, but in European countries where tobacco paper, tobacco rag, and twist tobacco are used instead of stems vaporizers are of importance.

In our window gardens nycotyl vapor is the most convenient way of applying tobacco for killing insects. We often read about fumigating window plants with tobacco smoke! Why, the thing is not only almost impracticable, but an abomination that no family would submit to. But it looks pretty enough on paper.

THE HANDSOME NEW LILAC CÆRULEA SUPERBA.

A Glance at Some Good Lilacs.

The more common forms of the genus, the old purple and white of our gardens, are more widely known perhaps than any other ornamental shrubs in cultivation. This is easily accounted for. Their cultivation in this country dates almost from its first settlement, when our forefathers brought the bush with them as so much of the old homes to be transplanted to the new. Ever since, as a result of the hardiness, ease of culture, freedom of propagation by division, and withal the perfume and sweetness of the flowers, of the Lilac, the plant has spread from garden to garden until it is familiar to everybody.

But the object of this article is to invite attention to some of the improved but less commonly known sorts of this shrub, and which deserve to be more widely cultivated. We do not forget however that the old common White Lilac with its delightful creamy-white blooms is a difficult variety to surpass, if indeed it ever has been altogether excelled. This possesses the peculiarity of tending to become a tree, a characteristic that should in this case be encouraged by cultivators, while some of the more recent whites especially such as have Persian blood are bush like in their habits, hence, are generally considered to be more desirable.

Of improved varieties that have proceeded from the common types may be mentioned the following.

Large-flowered White. This has pure white flowers that appear in very large trusses. It is generally conceded to be the finest white Lilac now in cultivation.

Albert the Good. A recent variety of erect growth. Flowers reddish purple, the best and most decided color of its class.

Charlemberg. A distinct variety with small light purple flowers shaded to pink.

Colmar's Lilac. Large pale blue flowers, remarkably fine glossy foliage.

Cærulea superba. This is a recent variety that originated in the grounds of Ellwanger & Barry, Rochester, N. Y., and to whose kindness we are indebted for the use of the accompanying engraving. The flowers, in immense trusses, are of a remarkably distinct color, being light purple in the bud but of a distinct blue when open.

Double Purple. Similar to the common purple except that the flower has a double row of petals.

Giant. Unusually vigorous, with large leaves and flowers, the latter of a blue color.

Jacques Calat. Flowers rosy pink, of remarkably large size and produced in immense panicles.

Dwarf. This is a distinct variety, of small growth. Flowers of a dark reddish purple, in large compact spikes.

Prince Nottyer. One of the earliest Lilacs. Flowers delicate bluish purple.

Prince of Wales. A new variety, the flowers of which are purplish lilac, the petals slightly curled near the edge; Panicles medium to large.

Prof. Stockhardt. Lavender flowers; large trusses.

Next to the Common Purple and Common White Lilacs, the distinct species known as the Persian Lilacs are the best known. In point of fact all the types of Lilacs are of Persian origin. The Persian White Lilac, unlike the Common White, forms a large spreading shrub, the branches of which with age bend with a fine curve when loaded with flowers. The blossoms are of a delicate lavender white in May. The type known as the Common Persian has a habit similar to that last described. The flowers are a dark lilac color and are produced in much larger clusters and looser than those of the Common Purple. Although this shrub presents a more delicate style of growth than does the Common Purple, it in time forms a large broad bush.

The Rouen or French Red. This is said to be a hybrid between the Common and the Persian species and embodys many good qualities. The flowers are reddish lilac in color, in numerous large panicles. One of the finest of Lilacs.

Josika's or Chionanthus-leaved. A distinct and remarkably handsome variety of strong, upright growth and with long rich, shining leaves. The flowers are not so freely produced as in most other sorts, but are prized because of coming very late—after the others are gone.

Verschaffelt's Lilac. Another remarkably distinct variety, with flowers in large compact panicles, dark-red in the bud, changing later to Lilac.

The Chinese Lilac. This resembles the Persian, but with longer leaves; there are several varieties including reddish, purple and white.

Emod's Lilac is a distinct Chinese species, which assumes a tree-like form and has white flowers.

Insect Enemies of Flowers.

Nearly every flowering plant is affected by Plant-lice or Aphides. These cluster on the stems of succulent plants, or on the under side of leaves, causing them to curl over. They have flask-shaped bodies, with the hind-body or abdomen thick and rounded, and provided with two tubes for the exit of a sweet fluid which is secreted from the stomach. This fluid is called "honey-dew," and is eagerly lapped up by ants, (See Fig. 2), who are often the companions of Aphides.

The Aphides are exceedingly prolific, the summer broods being brought forth alive. It appears that the first brood, which in the spring hatch from eggs, and the succeeding summer broods, are all females. The males do not appear until autumn, when they pair, and the females deposit eggs on the stems of plants and branches of trees.

Fortunately the plant-lice have many enemies. The maggots of the bright colored, wasp-like, Syrphus Flies, Fig. 1; the grubs of the Lady-bird, or *Coccinella*, Fig. 3; the Aphis Lion, Fig. 9, or young of the golden-eyed, green Lace-winged Fly (*Chrysopa*), Fig. 6; and also minute Ichneumon flies, all devour them.

Among garden plants, the Pink is affected by *Aphis dianthi*. The roots of Asters are infested by a whitish Aphis, which is always attended by small, yellow ants, which may be seen bearing away their "cows" to a place of safety when an Aster is uprooted. The Aphides have long beaks, which they stick into the leaves and stems of plants, suck out the sap, and arrest their growth.

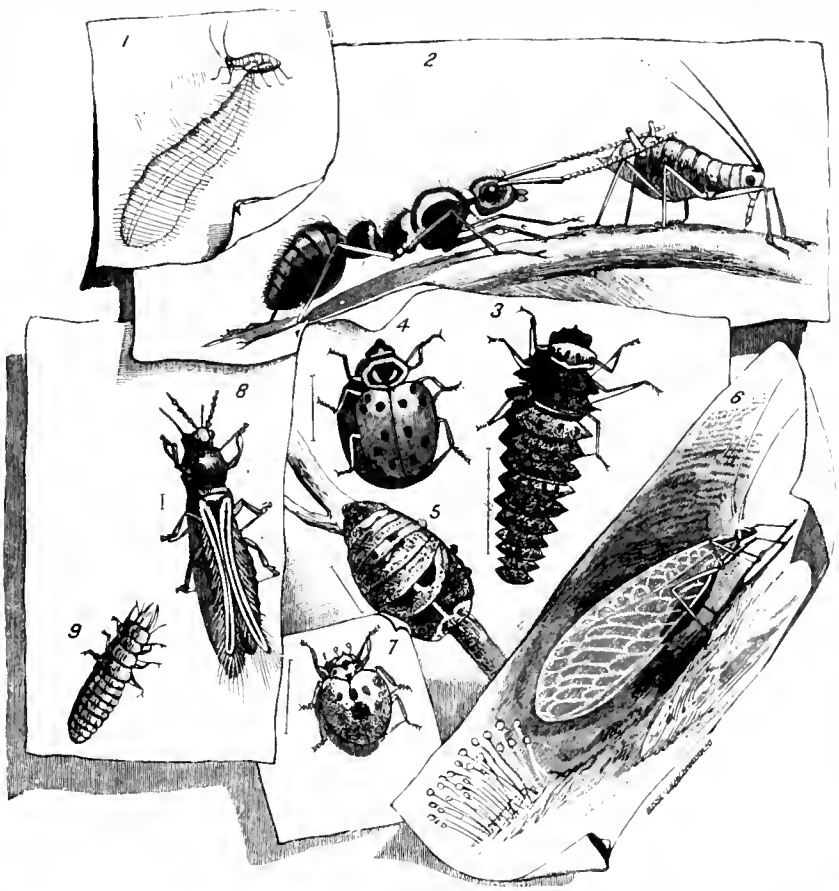
Plants which are aphis-ridden should be showered with a weak solution of carbolic acid or benzine and water; or Dalmatian insect-powder may be dusted over them. By burning Tobacco, having the plants under a cover, the lice may be destroyed.

PLANT OF CALATHEA (MARANTA) ZEBRINA. SEE OPPOSITE PAGE.

Closely allied to the Aphides are the family of Mealy Bugs (*Coccidæ*). They have thicker, more oval, fuller bodies, covered with a white powder, and are harder to dislodge than Aphides. Plants covered with them should be carefully washed in strong soap-suds. Ants are sometimes injurious to plants. A quantity of the best Dalmatian insect-powder, even if used out-of-doors, will break up an ants' nest, while benzine poured into the nest will also scatter them.

By far the worst enemy of the Rose is the troublesome little Slug-worm which eats the surface of the leaves, covering them with dead patches, causing the leaves to wither and curl. The slug-worm is a pale, yellowish-green grub, the body somewhat thickened behind the head, and about a quarter of an inch in length. Slug-worms appear early in July, and remain, unless immediately checked, through August. When fully grown, the Slug-worm stops eating, descends to the ground, and there remains until June of the following year, when the little, black Saw-flies, the parents of the worms, appear upon the new leaves. They may then be caught with the hand on cloudy days. With their saw they cut a hole in the leaf and insert an egg, from which the worms shortly hatch.

Hand-picking, the application of a very weak solution of carbolic acid, or kerosene, or powdered hellebore, or to dust the affected leaves with Dalmatian insect-powder every day, are excellent remedies. A faithful application of these one season will prevent the reappearance of worms the next.



INSECT ENEMIES OF FLOWERS.

1. *Larva of Syrphus.*
2. *Ant Milking Aphis, enlarged.*
3. *Larva Lady Bug, enlarged.*
4. *Lady Bug, enlarged.*
5. *Chrysalis of Lady Bug, enlarged.*
6. *Lace Fly and Stalked Eggs, enl'gd.*
7. *Epilachna, slightly enlarged.*
8. *Thrips, greatly enlarged.*
9. *Aphis lion, larva of Lace Fly.*

The Rose-chafer or Beetle is a long-legged, big-clawed, crawling, disgusting creature, which spoils the Rose and our pleasure in picking it. It seeks the Rose to devour the pollen and the petals. The chafer is a near ally of our June beetle, and has become extremely abundant within ten years. The beetles appear early in June. Hand-picking is a sure remedy if all would combine. They sometimes cluster in great numbers on the buds, and then should be seized and thrown into fire or scalding water.

Another enemy of the Rose is the little Rose-leaf hopper, a minute, yellowish-white insect, which punctures the leaves, causing them to appear blotched and white. These insects are very abundant, rising often in swarms from the bushes. They may be kept under by the same applications as have been recommended for the slug-worm.

Rose leaves are often found in mid-summer with circular holes neatly cut out of them. This is the work of the interesting Leaf-cutter Bee, which cuts out pieces of the leaf with her jaws to make her nests. Sometimes they almost strip a rose-bush.

The stalks of the Phlox are sometimes bored into by the Phlox-worm, the caterpillar of *Heliothis phlogophagus*. Of this caterpillar there are in Illinois two broods in a year; the first, appearing in July, becomes moths by the middle of August, the second pass the winter in the chrysalis state.

A very general feeder in gardens is the common Hairy Caterpillar or Fall Web-worm, which makes a tent on the branches of the Apple, Pear and Cherry. Late in summer, after it becomes full-fed, it throws off its gregarious habits, and scatters about the garden, and does in a small way more or less injury to low plants.

Another insect, which is very minute, exists in great numbers, especially in composite flowers, such as Daisies, Asters and the like. This is the little Black Thrips, Fig. 8; an active black creature about a twentieth of an inch in length. It nibbles the surface of the leaves, or punctures the petals, disfiguring the plant, and occasionally doing a good deal of harm. Careful and frequent washing drives these away.

The last insect on our list is a beautiful, broad, flat, golden beetle called the *Cassida*, which preys upon the Morning-glory in the grub or larva state. The grubs are common late in July, when we have found them in all stages eating holes in the leaves.—A. S. Packard in Youths Companion.

The Calatheas (Marantas) and their Culture.

Many of the best known plants formerly classed as Marantas are now embraced by the genus Calathea. Such is the case with the well known sort illustrated opposite and formerly known as Maranta zebrina. At best the difference between these genera is only one of botanical character, and were it not for the sake of scientific accuracy we should prefer to see the old name prevail for all. The culture as well as general character of the two genera are quite identical.

In the Calatheas we have some of the finest ornamental-leaved pot-plants in cultivation. C. zebrina of the annexed engraving is one of the best known. It has perhaps served as often as any other one plant to add beauty and polish to fine collections of conservatory or exhibition plants. The leaves are something like two feet long and six inches wide, of a rich, deep green, and have a soft appearance resembling the finest velvet. Many other species are equally ornamental.

The culture of Calatheas is not difficult, heat, water and shade from the sun being among the main requirements. But while needing an abundance of water in their growing state, a stagnant moisture at the roots is most injurious; good drainage is therefore essential. To have the folliage in the best possible condition an abundance of moisture must also be provided in the plant apartment during the season of growth. Great regard must be had to the kind of water used in syringing, for some kinds will leave an unsightly deposit on the leaves, spoiling their beauty, unless they be frequently sponged besides. Clear, soft water is undoubtedly the best for this purpose.

The best soil for these plants is a rich, loose, open loam, one in which a liberal proportion, say one-third, of decayed leaf soil or decayed hops, has been incorporated, and nearly the same quantity of well rotted manure, besides a heavy sprinkling of sharp sand. The mixture should be used in a rough, lumpy state, so that the roots, which are of large size, may travel with freedom. The plants require a frequent increase of fresh soil by repotting or otherwise.

Nearly all the species are easily increased by divisions. July is a favorable time to set about it, or it may be attended to at any time later, but previous to the following spring months. In dividing them the plants should be shaken out of their soil, and then they may be readily separated into as many parts as there are individual crowns.

Calatheas are not subject to insects if properly supplied with moisture while growing, and a sufficiently moist atmosphere is at all times maintained. But without these red spider is quite likely soon to appear, and to quickly disfigure the leaves.

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532. **Chrysanthemums After Blooming.** They should be cut down and placed in a cold frame, cool cellar, or underneath the greenhouse stage, unless the cuttings are wanted now; if so, then place in a light situation as close to the glass as possible. Cuttings can be rooted from now on, providing one has the room to spare for them, and large specimens are required; but in most cases if they are rooted about the first of March it will answer as well.—C. E. P.

535. **Draining the Orchard.** You can set out the trees this spring as soon as the ground is in a proper condition to work, providing you intend to finish the draining before winter sets in. Otherwise don't set out the trees until the land is properly drained.—C. E. P.

534. **Twig Blight.** Cut back to healthy wood the ends of all limbs that show indications of this blight the very instant it is noticed. Are they Apple or Pear trees?—C. E. P.

575. **Fertilizers for Strawberries.** The guano, if a good article, should have produced good effects unless the weather was dry. We would advise that you prepare another plot next spring, and to leave present one do as it will with needful care. Bone and potash often give fine results upon Strawberries.

A Pine Tree.

A handful of moss from the woodside,
Dappled with gold and brown,
I borrowed to gladden my chamber
In the heart of the dusky town;
And there, in the flickering shadows
Traced by my window vine,
It has nursed into life and freshness
The germ of a giant Pine.

Out of this feeble seedling
What wonders the years may bring;
Its stem may defy the tempest,
Its limbs in the whirlwind swing.
For age which to men comes laden
With weakness and sure decline
Will add only growth and beauty
And strength to this tiny Pine.

I will take it again to the woodside,
That safe with its kindred there
Its evergreen arms may broaden
Yearly more strong and fair;
And long after weeds and bramble
Grow over this head of mine
The wild birds will build and warble
In the boughs of my grateful Pine.

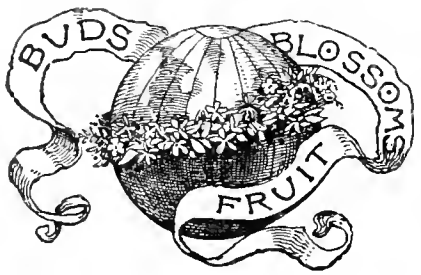
—*Philadelphia Times.*

The Rose is sweet, the Rose is red.
The Rose hath many a lover;—
The Showdrop hath a wintry bed.
And of a wintry cover.

But were I seeking for a flower
To breathe sweet thoughts and holy,
I'd leave the Red Rose in her bower,
And pluck the Snowdrop lowly.

White blossoms of the storm and cold!
If thou hast not a spirit,
Thou dost a living faith unfold;
And that is wondrous near it!

—*Paul Pastnor.*



The Calla is half aquatic.

The Bean is of the tropics.

A poor soil is expensive in the end.

Market Apples before they mellow up.

Subscriptions may begin with any month.

A light soil makes better flavored Carrots.

An old tooth-brush for scale insects on pot plants.

Young trees yield the finest, old trees the richest fruit.

A first step in fitting up a new home: plant an Asparagus bed.

The hot-bed is an excellent place to propagate Grapes from single-eye cuttings.

"**Every number** is worth the price for a year," write several enthusiastic subscribers.

Fruits and flowers, like human nature, need only opportunity to prove their quality.

A shift into a larger pot is rarely desirable as a pot plant is coming strongly into bloom.

Many fail with the Egg Plant from not starting the seeds early enough. March is about the right time, giving them a warm place.

Pruning. "We prune Apples, Pears and other hardy fruits any time that we have leisure between leaf fall and April 1st."—*P. Barry.*

Pry up a clump of the Bleeding Heart, *Dicentra spectabilis,* let it thaw out slowly, then pot it and you may soon have a fine window plant.

The Nursery "Agents" which GARDENING AND FRUIT GROWING recommends are the superb catalogues of reliable firms whose announcements appear elsewhere in the present issue.

Egg-shell Flower Pots. Elder's Wife suggests in the Floral Gazette the use of egg shells in place of thumb pots if the latter are scarce for young plants. They should be punctured with a darning needle for providing drainage.

Have you talked to that neighbor yet about subscribing? Many of our readers we know have done so by the numerous clubs that have come to this office of late, but many more are yet to be heard from if they mean to help this paper in such a most desirable manner.

Cypress Bars, etc. A recent writer cautions gardeners against the use of this wood for sashes, etc., saying that it never becomes wholly seasoned, hence it changes in dimensions with changes in the weather. Will our readers who have tried this material please report to us.

The Horse-radish often affords a good illustration of the old definition of a weed, namely, "a plant out of place." In its place occupying a limited spot in some corner of the garden, it is a very desirable plant, but allowed to spread beyond this spot it becomes a decided nuisance.

To mail flower buds the Mirror and Farmer suggests the cutting of a Potato into two pieces, boring holes into them and inserting the stems of the buds with cotton to support them. There is sufficient moisture in a good sized Potato to support a flower or plant slip for two weeks in a moderately cool temperature.

Cremation for Ants. Empty a shovelful of live coals on the hill, lay on top of that a flat stone, and pour over and around it a dipper of hot water. The steam hisses down into every crack and crevice of the underground labyrinth, and not an ant lives to tell the tale or an egg is ever to be found.—*Mrs. S. H. S., Metcalf Co., Texas*

Weeds and Insects. I look for the ultimate use of electricity in our terrific battle with weeds and insects. Weapons are discovered in proportion to evils developed. The discoveries of carbolic acid and kerosene have enabled us to hold our own in directions where we were threatened with total disaster. They are our two most important insecticides.—*Rev. E. P. Powell.*

The Peach is regarded as the most delicious fruit of its latitude, and is well worthy of more attention in the home garden. Nowhere does it succeed so well as in America, notwithstanding some discouragements that have arisen. To show the appreciation of the English and French gardeners for this luscious fruit, it may be said that they will expend more labor on one tree than most of our orchardists do on a hundred.

Our Guarantee. With a material increase of subscribers we could and would make a much better paper still. So you see something depends on every subscriber who can help swell our subscription list. Let all work together to such an end. To be sure the subscription list is growing more rapidly than ever before—it could not well help doing that—but let it grow yet faster, that the end sought may be the sooner reached.

Benefits from Close Sorting. Too much cannot be said for close sorting of fruits. I have just got returns for a few barrels of Apples sent to a reliable firm in New York, and the best Kings sold there for $3.75 per barrel, while nearly as good brought only $2.50 a barrel. For other varieties the price varied according to grading, in same proportion. Of course we must be particular to whom we sell, for a good many car loads of Apples were bought here this fall for $1.15 per barrel.—*Claude Smith, Chenango Co., N. Y.*

Manure for Mushrooms. Referring to some recent communication on sawdust manure for Mushrooms, Mr. William Falconer writes: John Cullen, of Bethlehem, Pa., a couple of years ago had the finest crop of Mushrooms I ever saw, and grown on mule droppings with some sawdust. Mr. Henshaw, of New Brighton, Staten Island, and one of the most successful Mushroom growers around New York, uses manure from stables where sawdust is partly used as bedding. Mushrooms will grow in it well enough, but have as much of the droppings and as little of the sawdust as you can.

Extremely Hardy Trees. E. W. Merritt, of Aroostook Co., Maine, has favored us with a list of trees that succeed in his far-north region, giving the extremes of cold in degrees *below zero* they will endure uninjured: *Apples.* Wealthy 35°, Gideon 35°, Pewaukee 35°, Walbridge 30°. *Plums.* Mooer's Arctic 35, Green Gage and Imperial 30°, Lombard 25°. *Cherry.* Early Richmond and May Duke Cherry 30°. *Ornamentals.* Maple, Birch and Poplar of different species, 35°, Kilmarnock Willow 30°. A few of the hardiest Roses are grown here by laying down or growing in tubs in cellar in winter.

The Variegated Rubber Tree. How is it no one has been found to say a good word for the variegated *Ficus elastica?* We have a pair of plants in 5½-inch pots about 4 feet high, and I do not think it would be easy to surpass them in beauty. The variegation in most of the leaves is almost a pure white, much better than we have seen it. The plants are grown in a hot-house and shaded from sun, but with plenty of light. During winter they stood in a cool Orchid house. I do not think it would be safe to keep them so cool as the green form. Though difficult to reproduce, I believe by rooting the tops of strong plants, shoots are formed at the axil of the leaves, which when larger strike well.—*Old Gardener.*

Myrtle for the Window. It is not to the Vinca or Periwinkle, often wrongly called Myrtle, to which we here allude, but to the true Myrtle, *Myrtus communis.* This is a beautiful little tree with small, dark-green, exquisitely shaped and smooth foliage of an agreeable fragranee, said tree bearing small white flowers in its season. It makes a most capital window plant when grown in a small pot, and kept fresh and clean by frequent sprinkling. Two plants that we know of have grown in a north window these last ten years, and have repeatedly been frosted, but they suffered no harm on that account, and they are now a fine pair, two feet high and nearly as much through, notwithstanding their being repeatedly robbed of cuttings and branches for friends who admire them. The plants may be had of almost any florist.—*A. H. E.*

To Winter Celery Cheaply. If you have an excavation used for hot-bed clean out the manure except about two inches at the bottom. Then take up the Celery with as much dirt on the roots as possible; pack it in this pit closely in an upright position, working the manure at bottom around the roots, wetting the roots soaking wet after it is placed in. Now make a light cover over top of hot-bed frame of matched flooring, having one end of the cover as a lid to raise when wishing to get in for Celery, and also to air on mild days; and as severe weather advances put a good covering of straw on top of the cover and around the sides. If frost should appear to be getting in too much, place in the pit at one end a kettle of live coals occasionally. Celery put up this way blanches nicely, grows all winter, and can be had at any time.—*A. M. N.*

A Cheap and Effective Tree Guard. After all to be said in favor of setting out young trees instead of older ones for quick results, the fact remains that small trees are far more susceptible to injury from browsing animals or from fouling by dogs, etc., than are larger ones, unless some special protection is provided. We herewith present an engraving of a cheap and very effective tree guard for a tree of any size, located where there is danger of injury from animals. No explanation of its construction is necessary in addition to the cut. It would be of particular value in the case of young evergreens. A guard similar to this might be made for street shade trees, but having less stakes, and these brought much nearer to the tree at the base, and spreading slightly at their tops for admitting air and light to the trunks.

An Amateur's Fire Hot-Bed. As there is some trouble attending the making of hot-beds I prefer a frame bed, heated by a small kerosene

A Cheap and Effective Tree Guard.

lamp, constructed after the following method: The frame which we have used for several years, and large enough for ordinary use, is sixteen by thirty inches, fifteen inches high in front and eighteen at the back. About half way from the top are nailed cleats to receive common roofing slates to form the bottom of the bed, on which are put two or three inches of wet sand. Bore a few small holes below the slate to supply air to the lamp, which may be very small. Fasten a piece of sheet iron just above the lamp chimney to distribute the heat. Cover the bed with a sash and set in a shady place. The first cost of this may be a little more than a manure bed, but it has the advantage of being ready when once made.—*L. M. Pope.*

Word from a Californian. Our subscriber, J. A. Clayton, of Santa Clara Co., California,

writes under date of November 25. "I note but few references to this State in POPULAR GARDENING. It is a surprise that it should be so little understood in the East that the climate of the coast counties for a distance of six hundred miles is almost uniform and one of the finest in the world. Not sufficient frost to kill hardy plants. The thermometer now ranges from 48 at sunrise to 65 at midday in the shade. In my garden today I find the following flowers in bloom: Ageratums, Alyssums, Japan Anemones, Begonias, Callas, Chrysanthemums, Cosmos, Abutilons, Acacias, Jasmines, Roses, 15 varieties, mostly Tea, Heliotropes, Geraniums, Laurestinus, Marguerites, Marigolds, Morning Glories, Sweet Peas, second crop, Nasturtiums, Pansies, Pinks, Fuchsias in variety, Lemon Verbenas, Violets, Verbena and Zinnias.

Nelumbium Luteum. W. C. Steele, Switzerland, Fla., writes to this journal as follows: This plant is by no means so rare as is generally supposed. My home formerly was La Porte, Ind., and there in a small lake about three miles from the city the Nelumbium was very abundant. One of its peculiarities I have not seen mentioned is that while part of the leaves are supported clear of the water by stiff stems, a large proportion lie flat on the water, with small slender stems like those of the white Water Lilies. (*Nymphæa*). The latter class of leaves often grow very large—over thirty inches across. The plant is found far south of Philadelphia. Dr. A. W. Chapman, in his Southern Flora reports it as being found in lakes and ponds near Tallahassee, Fla. I have good authority that it is found in the St. John's river. The still rarer Yellow Water Lily, (*Nymphæa flava*), a true Nymphæa, is very similar to the common white Water Lily of the North, except in size and color, the first being quite small and the last light lemon; common in the St. Johns river, Florida.

A Fine Bulbous Plant. The subject of our engraving on this page is a comparatively rare but easily grown summer flowering bulb, Galtonia (or as some class it, Hyacinthus) candicans. It was first brought to the conspicuous attention of Americans at the Philadelphia Centennial Exposition, where a lot had been planted in the open ground by Krelage & Co., of Haarlem, Holland. These flowered finely and were much admired, receiving also the award of a medal. In general character the Galtonia is a noble bulbous plant, having, in late summer, flower spikes from four to six feet high furnished with waxy-white bell-like blossoms 1½ inches long. Its native habitat is the Cape of Good Hope, a region to which we are indebted for so many choice bulbous plants. The culture of the bulb is easy, being similar to that of the Canna, which it more than equals in hardiness. We have known young ones to live over without protection in light soil. The proper winter treatment is to keep them in dry soil in the cellar or greenhouse, or they might safely be trusted in a dry cold frame. The plant is increased by offsets from the bulbs or from seeds, which flower about the fourth year. The distinct and strong-featured habit of this plant makes it valuable for the flower garden. When a group is well grown in deep soil it is striking and novel in the late summer garden. A group rising from a bed of dwarf shrubs tells well, as indeed the plant does in almost any position when well grown. The bulbs may be procured from a number of American florists, who pay special attention to keeping up a stock of choice bulbs.

Charles H. Marot, whose name has long been familiar to Horticulturists as proprietor and publisher of the Gardener's Monthly, died in Philadelphia, after a brief illness, from pneumonia, on the 21st of December, in his 63d year. The Gardener's Monthly started in 1859, by Dr. Rodney King, of Philadelphia, and continuously edited ever since by the able Thomas Meehan, passed, in 1881, into the hands of W. P. C. Brinkloe, who had hitherto only printed it. C. H. Marot came into the firm subsequently, and on the dissolution of the partnership, 17 years ago, the Gardener's Monthly fell to his share. Through his wife's connections, of whom the famous old nursery firm of David Griscom, of Woodbury, N. J., was one, he acquired a great fondness for gardening, and took a great pride in the Gardener's Monthly. He was the soul of honor and integrity in all his dealings. His father was one of the early settlers in West Philadelphia, and among those who did much to make it what it is to-day; and the son took the same civic pride in the progress of things. He leaves a family comprising a widow, three daughters, and a young son of about 16. It is gratifying to learn, as we do from a reliable source, that under Mr. Marot's management the Gardener's Monthly was in such good shape at the time of his death, that the family were at first disposed to continue its publication themselves, but a fair offer for its purchase coming, and only one month of the new year being broken into, it was thought best to let it go. It will now be merged with the American Garden, published in New York City.

Geraniums. To have good stocky plants Jennie Spencer of Marion Co., Ill., writes that she starts cuttings in May and June, in good leaf mold well mixed with fine sand. "As soon as

Galtonia (Hyacinthus) Candicans.

they are well rooted I place them in small pots, label them and sink to the rim in shallow boxes of sawdust. This is the best of anything I ever tried to sink pots in; it is good to root cuttings in also if well-rotted. As soon as the plants are root-bound I repot to a size larger, and leave the plants to bloom in them until they are wanted for specimen plants, when they are otherwise treated. In my south windows are some grand Geraniums, a few of which I will notice: Little Fred, dark crimson, large white eye; this is a seedling from Jean Sisley and is a valuable winter bloomer; Dr. Jacoby, clear salmon; Jean Sisley, light red, white eye; La Constitution, double, salmon; Asa Gray, salmon; Peachblossom, light pink; Clipper, dazzling crimson—the best Geranium I grow, always in bloom; Little Harry, dwarf zonale, beautiful leaf with dark zone, constant bloomer. I would not consider a collection complete without a few General Grant. Young plants are poor bloomers but at three years old they are grand. Then I would add Master Christine, Queen of the West, Robert George and others, all good. Then I have two low, wide window shelves that are filled with tricolors next to the glass, where they revel in the warm rays of the sun. These are the delight of all lovers of the beautiful. I feast my eyes on them every day, and I think they grow more beautiful as the days grow warmer. Among the best of these are: Bijou, Lady Cullum, Africa, Marshal McMahon, Crystal Palace Gem, Black Douglas, Happy Thought and others. These of themselves would fill a window with brilliant colors, and very fine to use wherever a touch of color is needed, lighting up the dark green Geraniums with magic rays. I find them easy to cultivate, constant bloomers, and not much subject to insects.

Random Floral Notes by our New York Correspondent.

There was a "new" Carnation on the market at Christmas; white fringed and flecked with bright emerald green. Of course the color was artificial, being ingeniously produced by allowing the cut flowers to absorb sulphate of copper. It was "pretty," just as a chromo might be pretty, but it could hardly be admired from an artistic standpoint. Made up in a basket with Adiantum, these flowers were much admired by the unbotanical public.

Balls of flowers are much admired and much used now in decorations. They are suspended in doorways, or hung in front of mirrors. At the recent Patriarch's ball there were balls of Callas suspended at various points of vantage. The favors were hung on screens, as is usually the case during the present season.

Some of the loveliest baskets for New Year's gifts were made of Orchids; Siebrecht & Wadley are specialists in this particular. Some lovely effects are produced with Calanthe Veitchii; its lively Rose-color shows off to great effect when combined with paler flowers.

We see a good deal in the society columns of the daily papers about the use of the Puritan Rose in every social event, but in point of fact this flower does not take at all; it is a great disappointment to the growers. Few of the new Roses of the past year seem likely to amount to anything of importance, and the growers who invested largely in them are feeling more than sore on the subject.

Pink is still the favorite color for dinner decorations. A centre strip of pink plush is laid on the white damask cloth; entire cloths of plush or satin is a vulgarism now eschewed by people of good taste. The decoration is laid on this center strip; and must be of harmonizing cloths. Grace Wilder Carnations and Mermet Roses are much admired for such work.

Around the holidays Holly and Mistletoe were very largely used in big decorations. These greens were very plentiful; after Christmas there were crates of Mistletoe knocking around the markets unsold, chiefly owing, no doubt, to the fact that several of the steamers bringing it in were overdue, so that it did not arrive until after the 25th. Some of the large florists who do not have a very large stock of decorating plants use a lot of this sort of stuff, and also dried Palm leaves, when decorating a large and empty place.

Those little glass bubble vases, recently introduced by Klunder, are a charming innovation in table decorations. They take the place of the fairy lamps, now out of date.

The fashion of giving bridesmaids a floral slipper, instead of the stereotyped nosegay, has reached this country, after some months' popularity abroad. The slipper is filled with flowers, harmonizing or contrasting with the dress, and slung over the arm with ribbon of the same color. For most occasions, the hand bouquet is a simple looking affair, though put together with consumate art. It is always a loose-looking bunch, sashed with ribbon.

Elaborate corsage bunches are rarely displayed on the street by fashionable women. A bunch of Violets or a single Beauty Rose is the favorite, or sometimes a single spray of Orchids is seen.

At an elaborate wedding at Delmonicos in the middle of January the decorations largely consisted of fine foliage plants, which are, after all, more desirable and effective in every way than cut flowers. The ceremony was performed under an arch of choice flowers, which is now preferred to the more familiar canopy; this supported a large bell.

A wider range of choice is allowed in general flowers; colored blossoms of all sorts are used, even to glowing Jacqueminots. The prevailing taste seems to tend towards simpler styles. Certainly, what are called "symbolical designs are often painfully ugly.

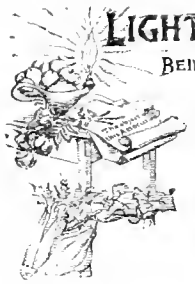
Florists, and a good many other business people, are not altogether pleased with the present custom of leaving town for New Year's Day, which prevails among fashionable people. It diverts a good many dollars from the florists' pockets, inasmuch as it does away with many social events on that date.

A funeral design illustrated in an English journal recently, and credited to the States, consisted of a rustic five-barred gate, draped in flowers. It is hard to explain just where its appropriateness came in.

Simple plateaus of choice flowers are beautiful and appropriate for laying on a funeral casket, or banks of delicate Ferns mixed with Orchids, soft mauve Cattleyas and Laelias are especially lovely in this form. It is an idea now growing in favor to have funeral flowers chiefly consisting of those most admired by the deceased in life. The idea of decorating the room in which the casket lies is a very desirable one, more to be admired than a profusion of designs. The use of Ferns in such work is much to be commended. Indeed these charming but too-long-neglected plants are coming into greater favor now; people are beginning to realize more fully the beauty of a parlor Fern case.

The Langtry cup, won by John Trim at the late flower show, has resolved itself into a handsome toddy set, which is certainly of more use than a meaningless cup or vase. It was presented by the officers of the horticultural society at a pleasant little dinner given by the association.

EMILY LOUISE TAPLIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Light Grapes. Tons of black Grapes will find a market where pounds of white ones will ever be wanted.—*N. Ohmer.*

Root Lice on Apple Trees. Mr. Deming, of the Missouri Horticultural Society, says he eradicates these by sprinkling with wood-ash lye.

Raspberries and Corn. I cultivate Raspberries in hills, running both ways. It does not cost any more to cultivate an acre this way than an acre of Corn or any other crop. Have given up staking, as it costs the same to pick the fruit staked as it does without staking.—*Rockwell, of the Warsaw, Ill., Society.*

Yellows Connecticut State Pomologist Augur does not like to say are an incurable Peach disease but he wants more light on the subject. He spoke of the experiments going on at the Massachusetts State Agricultural College. He had been a believer in potash salts as a cure for "yellows," but could report no cures from this practice.

Manuring Grapes. A. C. Hammond, Secretary of the Illinois Horticultural Society, has confidence in plenty of manure for the Grape. He thinks there should be a load of barnyard manure the first year to each square rod, which would be 160 loads to the acre; and that from twenty rods thus enriched, more Grapes may be gathered for a series of five or ten years than from an acre grown on ordinary thin soil.

Strawberry Management. Mr. B. F. Smith of the Douglass County, Kansas, Society, recently stated that after 20 years' experience he manages his Strawberry beds as follows: As soon as the crop is off he rakes off the mulch and goes into the patch with a cultivator of his own invention, and cultivates as long as the weeds grow. He only leaves narrow strips of plants and between the rows scatters well rotted manure.

Horticulture in the Bible. The sacred writers and Christ himself were students of nature. Most of their illustrations were drawn from the spreading tree, the cultivated field, the sower of seed, the household garden, the ripening fruit, the tender vine. The sweet singer of Israel seems to have found the highest place in the heart of nature. His son—the wisest of men—wrote of every tree and plant, from the Cedar of Lebanon to the Hyssop that groweth on the wall. —*Mrs. G. A. Tryon.*

Flowers for Beginners. I would suggest the following: One paper each of white, scarlet and mixed Phlox, Verbena mixed, Mignonette, Tropæolum, Asters, Pansies, and one ounce of Sweet Peas. Of these only Mignonette, Tropæolum and Sweet Peas can be sown in the open ground. The others must be started in hot-beds, or in boxes in the house. Then when your plants are nicely started you can see how many you have and will know how much ground to fit for them.—*Mrs. Underwood, at a Wisconsin Meeting.*

Pruning Street Trees to a Pole. The practice of tearing up trees from swamps or hillsides and squarely cutting off their tops before setting them out cannot be too severely condemned. The trees for a time do well, but as the branches fork at the place where the top was cut, an exposed place is left in which the water collects, rotting the centre, when deformity or death ensues. This is the principal reason why so many Maple trees of a certain age are failing. Why not plant properly grown nursery stock in our streets?—*Prof. John Robinson of Massachusetts' Board of Agriculture.*

Fruit and Vegetable Diet. At a recent banquet of the London Vegetarian Society it was said that Apples alone would sustain life and health for a long time; that a mixed diet of fruit and vegetables is the most valuable; that anything wrong with these can be easily seen, which is not true of meat; that Dr. Nichols, during a vegetarian experience of fifty years, had only one week of sickness; that the strongest animals, like the horse and elephant, are vegetable feeders. Sir Henry Thompson was quoted to the effect that more people injure themselves by over-eating (too many kinds) than by over-drinking; and Dr. Allison expressed the opinion that a general adoption of vegetarianism would greatly reduce the need for services of the medical profession, and, moreover, gradually help British farmers out of the present difficulties consequent upon foreign competition in wheat and live stock.

Ornamental Trees. The Wisconsin Horticultural Society recently took up the subject of ornamental trees. To J. C. Plumb's question, What is an Ornamental Tree? a gentleman answered, "Any tree that will adorn my yard." Another, "A shade tree—a tree which does not shade me is not an ornamental tree." A third said, "An ornamental tree must not only shade but must hide defects." Another said "It is a tree that is imported, and is not a native." Another defined an ornamental as "good for nothing but to look at." Still another asserted that an Oak was only a shade tree, not ornamental. We are inclined to differ from all, and to regard all trees as ornamental when in a healthy, uninjured condition—the tracery of the branches and shoots, the soft green of the foliage—while the microscope reveals wonders in the millions of sap vessels in the stem and twigs and the myriads of beautiful pores in the surface of the leaves; while extended groves and broad forests make up the difference between a delightful landscape and a bare and arid plain. Mr. Plumb regards for ornamental purposes the Elm first, then the Maple. Some would place the White Ash first. After these is the Basswood, then the Western Catalpa, one of the finest broad leaved trees. The Butternut, Walnut and Mountain Ash, as well as the Poplars and Willows, were named as beautiful, but with some defects. The European white Birch, Mr. Plumb remarked, stands at the head of all ornamental trees at the North.

Covent Garden Market, London. For hours before 5 o'clock in the morning hundreds of wagons had been bringing in great loads of Cabbages, Cauliflowers, Turnips, Beets, Potatoes, Lettuce, Celery, Onions, etc. These vegetables appeared to be sold chiefly at wholesale. Before the expiration of an hour the loaded wagons had all gone away, and all the litter they had made had been carefully removed. But others had come, so that at six o'clock the market had been entirely changed, garden vegetables giving way to fruits from many countries, and of almost every kind; thousands of boxes of Pine Apples, Bananas, Oranges, Lemons, fresh Figs, Grapes, Peaches, Apricots, Plums, Pears, Apples, Gooseberries and Currants, with Melons and Nuts of every kind. Of these fruits some brought high prices, while other and commoner kinds were comparatively cheap, and were probably within the reach of the millions of that great city. After these fruits had been displayed for their hour, they all disappeared to the stores of retail dealers about the city. When the fruits were gone their places were filled, every space and table, with flowers, Roses, Lilies, Pansies, Geraniums, Asters, Heliotropes, Azaleas, Jasmines, Fuchsias, Tuberoses, and hundreds of others less common. A new set of customers also appeared; thousands of flower girls as fresh and rosy as the blossoms they sought were there to buy baskets of flowers to make into hand or button-hole bouquets for a million of customers. In an hour these beautiful flowers had changed hands or were removed to be sold in other quarters, so that after three hours Covent Garden Market was brought again to neatness and quiet. Every day it was the same, and understood by all, so that the market could be visited just when the proper things were on sale.—*Dr. Townsend at the Columbus, Ohio, Society.*

Why Organize A Society? Robt. J. Halliday, President of the Gardeners' Club, of Baltimore, told why, at one of their meetings, and from his remarks we gather these practical points. Horticulturists unite to promote their own interests; to advance, elevate and further their business; to become better acquainted with each other; to take steps to advance education, afford information, exchange experiences and views, and to give to each other a helping hand and encouraging and fraternal support in social and business affairs. Our interests are common, our aims mutual. It is for us to widen the demand for our products, to better advise the public what it wants, or ought to want, and what we have to sell. There is no selfishness in this; this is business; this is the "trade secret" of to-day. Nurse and stimulate a want, and then be prepared to supply it! Do not wait for the public to buy a thing; but inspire a fondness for your choice products, and then be prepared to take advantage of the boom that is sure to come as civilization, luxury and refinement advance. But let us remember that an empty bag don't stand up; let us keep up with the times; let us accumulate knowledge; let us know what progress is being made, what our fellows in the trade are doing. We have intelligence enough, brightness enough, in the gardening material around us here to keep pace with any community. Let us take steps to begin, on however modest a scale, our horticultural library. There is nothing that comes before it in value. We owe it as a duty to ourselves; to the young men, who are coming on and are of us; to the learners. A few books will open the way to what may be, ought to be, a future useful, indeed, a noble collection of these helps to the gardener's trade. To give ample force and influence, we need the strength in members which comes of numbers. Do not remain satisfied until our roll includes all the gardeners within reach, whatever their sphere of activity. This is a mutual organization, and we must expect to both give and receive.

The Culture and Varieties of the Raspberry.

[*E. A. Riehl and others before the Alton Horticultural Society.*]

With the droughts and other unfavorable circumstances from the experience of the past two seasons I cannot be very enthusiastic, for the profits have been very small. Any good land will answer, which should, of course, be well prepared by plowing and harrowing. I think, however, that the after cultivation is more important than the preparation of the ground before planting.

I prefer to plant in rows both ways, 4x8 for the blackcaps and 3x7 for the reds. Planting should be done in the fall. After planting, one or two furrows on the plants will prevent heaving.

It is best to use plants of the black caps grown one year from tips; when tips are used they should be planted early in the spring, but where one has grown the tips on the premises it is best to leave them where they grew until they have made a growth of about a foot, then take up with a ball of earth and plant where wanted. In this way a perfect stand will be obtained, a thing almost impossible to do when planting tips; another advantage in using plants over tips is that they can be planted deeper, and are less liable to be blown over by the wind when loaded with fruit.

The first year after planting no fruit should be grown, but the plants cut down to the ground. The second summer and afterwards pinch the young canes as soon as they are 14 inches in height, and then pinch no more. The following spring prune the branches to about a foot in length.

Of the caps I prefer the Tyler and Souhegan, which are very much alike, and the Greggs; these fill the season and are the best of the caps. The reds I would not plant, as I find them to be less profitable than the blacks; they sell for about the same, cost more to pick and to grow, and produce less. I consider the Brandy Wine and Hansell best for Market and the Turner for home use.

Mr. Jackson—Would recommend the Hopkins Raspberry in addition to the foregoing. It ripened between Tyler and Gregg, was hardy, productive and nearly as large as the Gregg. Some one asked why the Ohio was omitted, and received the reply that it was too small, though hardy and productive.

Mr. Vandeburg—Plants 2x7 feet and allows four to five stocks in each hill. Of red, plants Turner and Cuthbert. Hansell did well this season. Shafer's Colossal was recommended by several members for home use and local market.

Relative to Blackberries, President Brown did not know what to plant; was experimenting and hoped to find some new variety that was early, large, hardy, productive and remained black after picking. The Wilson was such a berry but was subject to borers. The Snyder is too small.

Mr. Vandeburg got heavy crops of Snyder which sold well in Jerseyville market. Messrs Jackson and Riggs would plant the Snyder.

Grape Culture in the Lake Erie Vineyard Region.

[*Practical talks before the Chautauqua Horticultura Society, Dec. 5, 1887.*]

Thousands of acres of the best land o Northern Chautauqua and adjoining counties are being devoted to this indnstry, which in extent and importance is increasing in an almost unprecedented ratio.

President Becker.—Grapes do not need the best of land; we have lots of good Grape land

all the way from the edge of the lake to the forest line on the hills. Plow suitable soil, in lands eight feet wide and plant in the deep furrows. If they are not deep enough dig them out and replace earth removed with some good top soil. I think it best to put on some fertilizer; prefer ground bone, from a handful to a half pint to each vine. We strew this on each side the furrow, and as the earth is drawn in to cover the roots the bone becomes well incorporated with it and gets near the vine where it can give it a good start. Vines treated in this way grow twice as rapidly as where the bone is not applied.

I plant my vines nine feet apart, and about ten inches deep. Some advise us to plant twice as deep, but that depends on the soil. I would plant deeper in a gravel soil than on clay. If we plant below a certain depth roots will start nearer the surface, and the lower roots will either die or be of little use. I like to plant deep, but not too deep.

Ryckman.—I believe in planting down deep, the rows eight feet apart, and vines nine feet in the row. Used to believe in having the rows nine feet apart, but I find that if they are nearer we can plow an entire row at each bout with the gang plow, using three gangs. Four gangs are too heavy for a team. In preparing for planting would plow just as deep as I could, and remove the earth in the bottom of dead furrows and replace with the top soil.

We place the vines so the roots will all run one way and spread the roots out. Then cover with good earth and put in bone dust. The cultivation during the summer will fill up the furrows. In late July or early August we throw the furrows toward the vines, for winter protection, and if plowed early the ground will settle and not be penetrated so easily by frosts. Would not plow more than once in the summer. Plow away from the vines in the spring and towards them in the late summer. At the last plowing I have a man lift up each vine so it is not covered. If it were buried its mass of green foliage would rot and injure the canes. I have the earth drawn up around the vines. Next year I will have 65 acres bearing in one vineyard.

We found last season that the vineyards did best that were plowed out earliest. But don't plow so early that the land will bake. Wait till the earth is comparatively dry. Some only plow once, and others not at all. If the land is well drained, and the Grape roots are down deep, plowing may not be necessary.

Concerning deep planting, a friend has made a study of this question and he says to plant at least 20 inches deep. He would do this even in clay soil. Dig down two or two and a half feet deep, fill in with good soil to twenty inches, plant the vine, and cover with good soil, using fertilizer. If planted this deep the vine will continue to mature even after the surface earth is frozen.

I believe in thorough cultivation. The freshest, greenest looking vineyard I had this season was cultivated every week. If the weather is dry stirring will dampen the soil. If the soil is damp, stirring will let the air circulate through it and assist evaporation, thus preventing mildew.

The distance apart to plant depends upon varieties. A wagon can be driven through an eight foot row if the vines are trained as they should be. Our best vineyardists trim old canes to the lower wire and small canes to the second wire, and during the summer tie the young shoots to the top or third wire. This keeps the young wood off of the ground, gives plenty of room for working, lets the air circulate freely, and checks mildew and other diseases.

Best Varieties. The Concord is the old standby, but yet I advise to plant quite largely of some others. One of these is the Worden. I have several thousand roots; shall plant them all. The Moore's Early is the best early Grape. The Worden comes between Moore's Early and the Concord. It is the best black Grape we have, either for table or wine. At my fruit stand could not sell any other black Grape as long as the Worden was offered. In quality it is way ahead of the Concord. Its shipping qualities have not been tested, and here it may fail.

Plant Grape vines and keep planting. We can never overdo the business. All that can be grown can be marketed. Our Grape region is limited. Plant the Concord for the main crop. Worden and Moore's Early for early, and the Catawba might do for late, if our growers only knew how to care for it. It naturally bears too much. We put up five to eight canes and get a load of fruit that cannot be matured. In Central New York they prune their Catawbas to two canes, and only let them bear from one to two tons per acre. These will ripen perfectly. There is no finer flavored Grape than a well-ripened Catawba, and no poorer when immature. Since a crop of from one to two tons per acre will not pay as well as would Concords, it is not profitable to plant Catawbas. Concords sell for more to-day.

Practical Comments on Hybridizing and Crossing.

[By John Thorpe, Henry Bennet, of England, and others, before the Society of American Florists.]

Mr. Thorpe. The term "hybrid" has been generally wrongfully used. Hybrids are the offspring of different *species*. A seedling from seed of the Gen. Grant Geranium (a variety) as one parent, and Master Christine (another variety) as the other, would not be a hybrid, but simply a cross, both parents being varieties of the same species. But could a seedling be obtained from Gen. Grant (of one species) and the Rose-scented Geranium (another species) then we should have a true hybrid.

Many interesting groups of plants now cultivated were originally hybrids of species; notably the tuberous Begonias. The foundation of this superb class being Boliviensis, Pearcei, Davisii, Octopetala are admitted to be species, but the varieties in these groups to-day can be no longer hybrids, through their having been crossed repeatedly with one another. The same applies indeed to all cross-bred seedlings.

The mechanical part of cross-breeding I need scarcely mention, except to say that it is important and absolutely necessary to remove the stamens (pollen producing organs) from all flowers to be operated upon before there is any possibility of becoming self-fertilized, and to protect the pistils (or female organs) from being crossed other than by the variety selected. Unless the conditions of the female plant are such as to enable it to receive the pollen from the male, you will not have any seed. The mechanical application is simply the transferring of the pollen of the male to the stigma of the female plant.

Geraniums. Of Zonal Pelargoniums I have raised seedlings by cross-fertilization for nearly thirty years. The many colors to be found in them at this time have been obtained one by one from a very few.

I have found that to be successful in raising seedlings patience, perseverance, and good judgment are necessary. One of the first things is to secure good plants, possessing the properties most desirable, then to mate them accordingly,—being careful to prevent their being fertilized by insects or otherwise. The best time for Pelargoniums is early in November, as at that season there are but few insects, and pollen grains do not float in the air, as in summer. For years I used no varieties as parents except my own, as by bringing in varieties raised by others I frequently have broken up the characteristics I was anxious to perpetuate.

In crossing to obtain particular colors, I have found, as a rule, where a scarlet as one parent and a white as the other was used, the result has not been as satisfactory as where the colors have not been so widely separated, as there are always variations in seedlings, many of which differ greatly from each parent. If a seedling shows any new character it is best to keep it intact for at least two generations, and to breed it in and in so as to establish its peculiarities. This applies to plants generally.

Mr. Wm. K. Harris. The gentlemen had spoken of selecting the male and female Geranium flowers for color, form, etc. He had also been governed in his selections by the apparent strength, health, and other characteristics of the parent stock. As a general thing he had been successful in the results obtained, seldom failing to get something superior. He had found that, by scientific methods, the grower was certain to obtain at least a few flowers of superior quality; whereas, if nature was unaided, thousands might be grown without the appearance of anything having a quality above the ordinary average.

Carnations. Mr. Thorpe. In raising seedling Carnations for winter flowering, it will be necessary to use for parents such varieties as have the tendency to flower early, combined with a strong, free habit of growth. These are also much easier to cross in winter months than at any other season.

How far nature yields to man's influence is well portrayed in the Carnation. When taken in hand to improve it some twenty years ago, there were but few free-flowering varieties; there were scarcely any with long stems, and most of them had split calyxes. In the early days of Carnations there was no choice; now we can afford to be critical.

Mr. Charles T. Starr. I originated the Buttercup Carnation, as I might say, with my eyes shut, because I was without any known law to go by. It was produced from the cross of Edwardsii as the female parent and the old Astoria as the male parent. The color was from the Astoria. But the constitution of the Buttercup is entirely different from Astoria, the latter being rather a weak grower; and it is difficult to tell whence the constitution of the Buttercup came. We are now striving to get a good Rose color with Grace Wilder as the male parent, and the Edwardsii as the female parent. We have a very bright orange by fertilizing Buttercup with Century.

In regard to growing the seed after fertilization: About two days after the flower has been fertilized, if a union has been formed, the petals begin to curl. We then cut the petals off to the top of the calyx. That is necessary, as otherwise the seed will be likely to mold, as we generally grow the seed in the greenhouse altogether in the spring months. We find February the better time for fertilizing the Carnation. As soon as the seed has become ripe we plant it at once, before it becomes dry. I have known Carnation seed to come up and develop in three days. It is necessary to be very careful of the little seedlings after they have developed their second leaf, else they will damp off at the top of the ground. We then pot them in small pots, grow them for about a month, and set them out in the open ground.

Chrysanthemums. Mr. Thorpe. Artificial fertilization of these is an operation requiring great care in manipulation. Select the variety you wish to seed, pot-plants with one or two flowers preferred; then, as the flowers open, with a pair of sharp scissors cut off the petals so as to expose the style at their base; cover over with a piece of fine netting to prevent premature fertilization. Select for your pollen, or male parent, one which has the desired properties you wish to combine with the seed parent; then as the pollen ripens apply it to the style with a fine camel's-hair brush or a fine feather. Chrysanthemum seed ripens in from three weeks to a month.

Roses. Mr. Henry Bennet. With a crimson male you can get a crimson from a white female of the Hybrid Perpetual class, but no one has ever yet got the yellow into a Hybrid Perpetual. The yellow in the Polyantha Japonica once fertilized will produce a yellow almost to a certainty. If you fertilize with the yellow variety you will almost certainly get a yellow with it, even though you operate on a white flower. One important matter: pay particular attention to secure a high quality in the male plant. You will get better progeny from a moderate female with a good male than from a thoroughly good female and only a moderate male. The better the parents the better the results. I have had many good results from a bad female, but never succeeded in getting good flowers from a bad male.

Mr. John N. May. In the hybridization, to attain a color, I find that we are obliged to select not only a good strong constitution, but very carefully the colors we wish to have perpetuated. To improve the color I have found a more difficult matter than anticipated. We cannot create from Nature a primary color,—we can only assist Nature. Scarlet has never yet been produced in the Rose. Appreciating this fact, I made it the object of my researches to obtain the nearest possible approach to a scarlet. I took General Jacqueminot and fertilized it with Perle des Jardins. The result is a Rose ten shades brighter in color than any known at the present day.

Potatoes. Mr. D. S. Heffron. I have succeeded better with Potatoes than with others things. I select first the mother plant, endeavoring to get a healthy constitution, and of the form I want perfected. For the male plant I select one of the requisite color and other characteristics to be reproduced. In crossing the two not all may have been better, but many of them were better than the parents. A good rule (I throw it out for what it is worth) is this: in the female parent get the strong, healthy-growing plant of the right height, and then in the male plant look to the color and the form of the flower.

Insect Interference, etc. Mr. Bennett. I do not think people need be discouraged in hybridizing because of a fear of insects operating on the flowers. The scent may in some instances attract insects; I believe that the great attraction is the color of the petals. I took my cue in this from

Charles Darwin. When you have removed the petals you are free from insect interference, in my opinion. There have been many experiments tried by Sir John Lubbock with Bees on colored paper. The Bees are more attracted by the colors than by the honey or anything you put on the flowers. So that if you take the colors away you remove the attraction. I have never detected the insect fertilization on a flower on which I have operated; and I do not believe it will be detected in any case after such an operation. The seed will mature just as well. Most flowers are bi-sexual, and these are more difficult to treat than those which are of either sex, because you have to castrate the bi-sexual ones. If you want variations, the way is to take out the bearing organs before they burst. If you get seed from that part of the flower after that, you are certain to have a new variety, whether it is interfered with manually or by the insect kingdom. In view of the great demand that exists for distinct varieties, it is almost impossible, in our day, to keep pace with the times if we wait for variations in the natural way.

The Culture of the Violet.

[Mr. L. H. Foster, of Dorchester, before meeting of the Gardeners' and Florists' Club of Boston, Dec. 6.]

As to varieties, the Maria Louise is the best for the Boston market, as the color is dark and the keeping qualities the best. Had grown it from the same stock he began with eight years ago, and on the same land each year with one exception, when he greensoiled the land putting in oats first and plowing that in, then sowing Hungarian grass and turning that under also.

He plants out eight inches apart in the rows with a space of twelve inches between the rows so they may be easily cultivated with a hoe, this being all the care they receive until the latter part of August. There was no sign of disease until last year when about a dozen plants in 10,000 showed the spot in August.

To give good clumps for winter bloom, Violets should be planted out about the 10th to the 15th of May so they will become well rooted before the hot season. Then they will carry through the summer. Beware of late planting.

They should be well cleaned in the field and moved into the house early. After taking in and once cleaning, incessant care and watchfulness are necessary; early and late airing, watering and cleaning must be attended to with much care. From fall till the middle of January is the critical time, requiring all the skill of the grower. If they are well and healthy then, there will be comparatively little trouble thereafter, though the care and attention to detail can not be relaxed. He would sum up the subject of growth thus: Have clean, healthy cuttings in spring, plant by May 15, keep clean from weeds through summer, clean from runners and decayed leaves by Sept. 1, remove to winter quarters by Oct. 15 at the latest, then watch, work and think.

The Disease. In regard to the disease he believed plants were susceptible to certain diseases, as is the case with the human family. As to how it comes there are many theories but the secret remains hidden. One grower thinks a change of plants from another locality is a remedy. But he related the experience of a grower in Newport who grew Violets for years, and had no disease. One spring he found a little spot and thereupon threw away all his plants and procured others from a distance. The next fall he had not a healthy plant. How should we account for that?

Another says it is a minute insect which bores into the stem. He had never seen the insect, and hoped it was only a supposition. Another says starve in the field and feed in the house, but he did not think this fully met the case, as he believed large plants were needed to insure an abundance of bloom.

Another says we grow them too warm. Last winter he visited a neighbor's Rose house which was some fifteen feet high and ventilated from the top. Some Violets were planted on the front bench at least ten feet from the ventilator and over two 4-inch hot water pipes and they were doing well all winter—some spot, but producing good colored large flowers. Still another says too much water is used. A florist near him who grows several thousand plants has a dugout or one sash frame connected with the foot of a Rose house and the drip is such that the plants are literally growing in a bog, and from these he gets splendid flowers. Case after case might be enumerated where objections have been met with the very conditions objected to, and yet let another try to grow them under the same conditions and utter failure ensues.

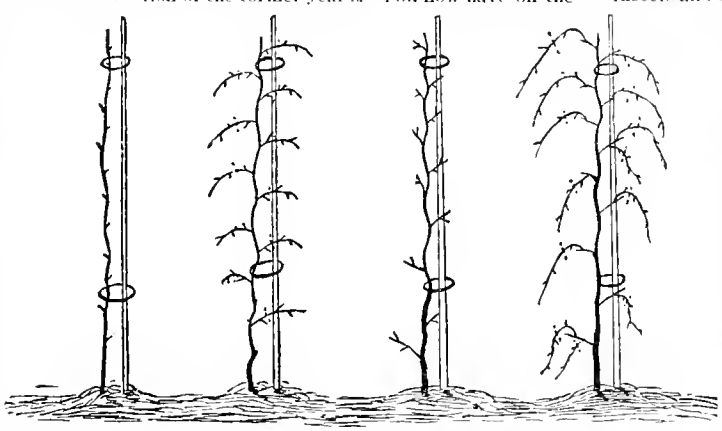
Grape Growing for the People.

[From a paper by C. A. Hatch before the Wisconsin State Horticultural Society.]

The most important part is pruning. You must prune your vine so as to start right, for that is half the battle.

One vine or cane to each root is all you want to allow to grow the first season, and this should be cut back in the fall, after the leaves fall, to two buds, from which your next year's vine is to grow. No stakes will be necessary the first year.

The next fall cut the two canes back to four feet in length, and if you want to train in the simplest way possible, cut one off the Janesville (Concord or Worden will need the two), and tie them up to a stake. Your vine is now in regular shape, and each year's work will only be a repetition of the former year's. You now have on the Janesville one vine four feet long, and on the other kinds two of the same length; these will in the fall each have branches or laterals, as they are called, on which the fruit, if any, will be borne. These laterals must be cut back to two buds each, every fall before burying for winter.



Spring Second Year. Fall Second Year. Spring Third Year. Fall Third Year.

GRAPE-VINE SECOND AND THIRD YEAR AFTER PLANTING.

And right here let me call your attention to a fact not generally recognized, that the vine on which fruit is grown is a bud in the spring, the vine as well as the fruit growing the same season. One hundred and fifty buds are considered the greatest number allowable on a vine, so do not think it destruction if you do cut away nineteen-twentieths of the vine in pruning.

Some may say summer pruning is necessary, or that an expensive trellis is necessary. I have not found it so, and think summer pruning and trellises of any kind, except what is really needed to support the vines, are worse than useless.

And now you have all that is necessary to raise grapes. As a covering I have used dirt only, put on four or five inches deep, and have had good success.

Fruit Culture in Massachusetts.

[By Prof. S. T. Maynard before the Massachusetts Board of Agriculture.]

This State is within the "fruit-belt" so favorable to Apples, Pears, and other fruits. In this belt, extending from southern Connecticut to the Canada line, Apples are grown of the highest color and best flavor. Grapes and Peaches also do well in favored localities. If farmers would encourage their sons more by giving them a pecuniary interest in the orchard and garden, fewer would be found leaving the farm.

Fruit growing in Massachusetts is a larger industry than many suppose. In 1875 the sales amounted to $3,000,000, while garden vegetables, including those raised on farms, reached only $2,500,000, and butter a trifle more. The corn crop was only one-third the value of the fruit, and the Potato crop only two-thirds. Statistics were given showing the great increase in the fruit product from 1875 to 1885, as follows:

1875.	Apple, 3,254,957 bushels, value	$1,450,252
	Pear, 59,259 bushels, value	118,302
	Peach, 15,945 bushels, value	44,823
	Plum, 1,769 bushels, value	3,481
	Grapes, 672,590 bushels, value	67,259
	Strawberry, 1,156,801 quarts, value	214,940
	Cranberry, 110,184 bushels, value	288,113
	Currant, value	10,605
	Raspberry, value	14,000
	Blackberry, value	14,000
1885.	Apple, 4,554,550 bushels, value	1,174,452
	Pear, 153,374 bushels, value	147,013
	Peach, value	1,839
	Plum, 5,948 bushels, value	12,381
	Grapes, 2,975,824 pounds, value	117,622
	Strawberry, 3,929,407 quarts, value	406,859
	Cranberry, 315,387 bushels, value	788,467
	Currant, 318,588 quarts, value	28,631
	Raspberry, 176,168 quarts, value	38,624
	Blackberry, 382,163 quarts, value	788,467

Though our soil and climate are favorable, we cannot depend on those alone. The soil must be fertilized, the trees fed. He favored turf culture for Apples, because in some instances the trees could be set on land unfit for cultivation, and trees in grass yield fruit of high color and good keeping qualities. We raise too many small inferior Apples and thus hurt the market. Good fruit is always in demand.

Insects and diseases must be fought and good selections of varieties made. We have no perfect varieties. We want new ones combining the good qualities of all our best. Testing should be done in a public way, and he hoped the Hatch bill appropriation would in part at least be applied to experiments in testing new fruits.

Of Pears we had in 1875, 203,000 trees, and 10 years later 358,000. This fruit must be treated more tenderly than the Apple, must be nurtured in a deep, rich soil, and manured with bone and potash, for example. For blight, cultivate the tree to keep it in a healthy and vigorous condition.

Of Peach trees we had in the State in 1875, 82,844, and in 1885, 276,800. Prof. Maynard dwelt on the characteristics of this fruit, its needs in the way of soil and situation, and of its diseases. New trees had better not be planted in old places. The roots should be covered.

Plum trees numbered 3,795 in 1875 and 7,590 in 1885. They are easy to produce and are not injured by high cultivation. The hen yard is a good place in which to plant. Worms, rotting and the black rot are the chief causes of loss.

Quince trees have increased in number since 1875 from 3,000 to 51,000. They never will be extensively cultivated, and low prices must rule soon, from the fact that many trees have lately been planted and will soon begin to bear. They require a deep, rich soil and are of slow growth. A well-drained soil is the best cure for blight on these trees.

Grape-vines numbered 224,000 in the State in 1875 and 356,000 in 1885. A south slope, sandy soil and careful winter pruning, will make it an easy and paying fruit to cultivate.

The Strawberry crop has not been paying in the last two years, but the growers are to blame for producing so much small, inferior fruit. Hill culture produces the best fruit; and thus, by using the cultivator instead of hoe, production can be cheapened and bettered every way.

In Blackberries and Raspberries the demand is for large fruit. The Turner and the Black Caps are the best. A plantation should last 10 years without resetting.

The Summer Propagation of Roses.

(Continued from page 81.)

It may be inquired where are Devoniensis, Mme. Margottin, Louis Richard, Mme. Camille, Beauty of Stapleford, Souvenir Elize Verdon, Mme Chedane Guinoiseau and perhaps others. The above are so well known that we might with propriety give reasons for their omission from the list; besides every one has some marked faults. Devoniensis too flimsy; Mme. Margottin opening imperfectly, often the petals rot; Mme. Camille, color a dirty, dingy, flesh pink; Louis Richard fails to open its buds; Beauty of Stapleford mildews badly; Mme. C. Guinoiseau nearly single.

The Hybrid Tea class are so subject to black spot and mildew that they cannot (except varieties mentioned) be trusted to open air culture. Lady Mary Fitzwilliam, when it does perfect itself, combines as many charms as are to be found in any one Rose.

The time was when anything in the shape of a Rose would be taken without question, but that day has gone by. Intelligent amateurs demand Roses of merit, and they don't want any more brambles and thorns with high sounding names attached; they demand the best we have to offer.

It is a notorious fact that the nearer worthless a variety the greater the ease in propagating, and somehow the poorer the variety the larger the stock on hand, in many cases. Let us have the nerve and courage to increase the dump heap, by emptying our houses of worthless kinds.

Of the Hybrid Perpetual section we simply offer a short list of the newer sorts which are certainly worthy of trial: Queen of Queens, this is almost as free as our would-be American Beauty; beautiful in form and of a light silvery rose color. Ulrich Brunner, not a new Rose, but one that deserves to be better known. Mad. Joseph Desbois, a most beautifully formed, full Rose, almost pure white in color, a promising variety. Ella Gordon, a finely formed scarlet crimson. This can be recommended for its adaptability to pot culture. Pride of Reigate, striped and flaked cream on a crimson ground. Mrs. John Laing is perhaps the very freest blooming Rose in the class; color, a silvery rose pink, very sweet. Marshall P. Wilder, one of the very finest Roses of its class, and destined to become popular the world over. Color cherry crimson, of good size and free flowering in the autumn.

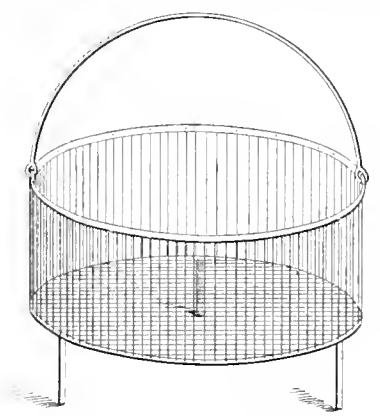
Best Varieties for Forcing. Perle des Jardins has no equal as a yellow Rose for indoor culture. Niphetos is the best and most profitable white. La France and Catharine Mermet occupy equal honors among pink varieties. The Bride, a most excellent white, and next to Niphetos should be extensively grown. It would be well to give Pierre Guillott further trial, for with some it shows especial claims for winter work. Papa Gontier is excellent from October until March, but flimsy and open in the intervals between those dates; will supercede Bon Silene in a large measure, as it is larger in size and of deeper color. Sunset is destined to grow in favor.

Madam de Watteville and Madam Gabrielle Drevet might be classed as twin Roses, differing in color, however; both beautiful and charming, but they will not furnish buds enough.

Countess de Freigneuse has two notable defects; one is, the outer petals invariably come crimped and defective in color. Secondly, it has a crook in the stem just below the bud; it forces well, and no one but likes its color, a yellow.

W. F. Bennett, with many a most disappointing failure. It is quite evident we do not keep the roots of our Bennetts right, and herein lies our trouble. When it does well it is profitable.

American Beauty. This variety is all that could be desired for market purposes in the spring



A GOOD AND SIMPLE FUMIGATOR.

season, and when good prices can be had grow it for cut flowers, but not otherwise.

Puritan. The same remarks apply to Puritan in measure that we have cited against American Beauty. Unless a good figure can be gotten for the flowers, Rose growers in the smaller towns and cities have no special business to occupy too much space with it, but we most emphatically recommend the Rose to growers in or near the large trade centers, for it is a Rose of unquestioned merit and destined to make a mark for itself where Hybrid Roses are wont to be used. It is subject to black spot, but this perhaps will be overcome by good cultivation and growing it on its own roots or some more suitable stock.

Luciole. This is a seedling from Red Safrano, of splendid color, strongly scented, free in bloom, forces freely and a most promising variety. Color a soft crimson shaded with golden yellow.

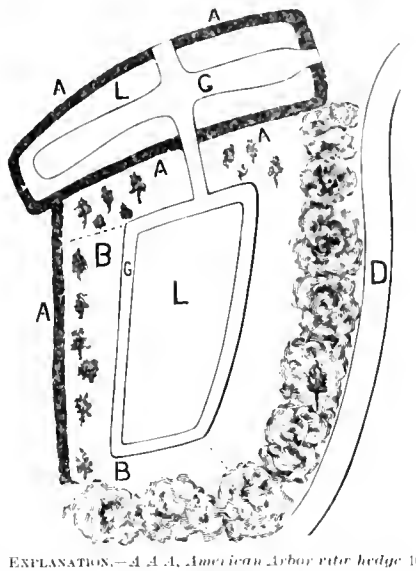
FROM VARIOUS SOURCES.

A Study in Gardening. The drawing (made on the Hunnewell Place, near Boston,) represents a trapezium of ground about 9 rods wide by 6 or 7 rods in average breadth, and bounded on two sides by an evergreen hedge, and on the other two by deciduous trees and shrubs. This plat is entered from the north, a gravel walk 4 or 5 feet wide traversing the enclosure. Inside the walk is a plain lawn, and also on the north and east sides, but the west and south sides (BB) are flower borders. Dwarf evergreens are planted here and there in the western border, and also on the northern lawn. Among the evergreens Abutilons, Lantanas Rubber Plants and Hibiscuses are clustered around, while Salvias, Hollyhocks, Zinnias and others of the taller annuals and herbaceous perennials are massed next to the hedge, and smaller plants next to the walk. But the greatest beauty of this garden was no doubt the close evergreen screen on the west and north, and the copse on the east gave at least six weeks' longer enjoyment of its beauties than if it had been entirely exposed. The carriage drive was only a few feet distant, yet such was the closeness of the Purple Beeches, etc., between, that one could pass and not suspect the garden. The evergreen walk on the north (at top of engraving), from which the garden was entered, was formed by an additional hedge.—Ohio Farmer.

A Good Fumigator. I look on a complicated fumigator as perfectly useless where large numbers of houses are to be smoked; professional gardeners in general despise them. An old sieve answers much better; but the accompanying figure will give an excellent idea of a fumigator not often met with, although one of the very best contrivances extant. It is made of wrought-iron, and of any size from 1 foot to 3 feet in diameter. When the tobacco is once lighted it burns quite freely without any blowing, and gives off a dense volume of smoke in a remarkably short time. It is easily set at work by placing a few glowing embers from the stoke-hole fire on the bottom and sprinkling damp Tobacco. When fairly alight the fumes may be cooled by spreading a damp sheet of coarse tiffany over the handle, letting it fall loosely around the sides. The last precaution is worth adopting in the case of Ferns when throwing up their young fronds, or for such Orchids as Odontoglossums and Masdevallias, both being apt to be injured by hot smoke. The tenderest exotics will bear the densest cloud of Tobacco-smoke imaginable, providing it is cool. It is heat, not the narcotic, that injures.—Gardening Illustrated.

Large Raisin Consumers. The United States is the largest consuming country of Raisins in the world. Reliable authorities estimate the consumption at about 2,000,000 boxes of about twenty-two pounds each, which, at an average of $2 a box, shows an expenditure of $4,000,000 per annum for one article in the dried fruit line. The amount referred to represents, say 1,000,000 boxes Valencia, 750,000 boxes California, 2,000,000 boxes Malaga, and 100,000 boxes Smyrna. The crop of the world for the present season is estimated, in round numbers, at 6,500,000 boxes, about as follows: Valencia, 3,000,000 boxes; Malaga, 600,000 boxes; California, 750,000 boxes; and Smyrna, 2,000,000. The shipments of Valencia Raisins to this Country to date are 500,000 boxes, 300,000 of which are now afloat.—Chicago Times.

To Make a Quick Lawn. Our little patch of about seven square rods was, in part, an old cellar hole where a building had been removed. The hole was filled at the bottom with rubbish and inferior soil and gravel. The top two feet was good garden soil. After filling and leveling off to a desirable grade, fertilizer was sown on broadcast at the rate of about 12 pounds per square rod. A few refuse wood ashes were also sown, and the whole cultivated thoroughly 2 to 3 inches deep with a hand cultivator. Plain Timothy and Redtop seed, about 30 cents worth, or $7 worth per acre, was then sown freely, going over the ground twice each way to insure even sowing. We also put on 3 or 4 quarts of Oats before cultivating the last time. Grass seed is cheap now; Redtop a little over $2 for a sack of 5 bushels, and Timothy only $2.75 per bushel. Our lawn was seeded the 10th day of September, and in just 31 days, October 13, the scythe was run over it to cut off the oats, which were from 12 to 16 inches high, and had begun to look a little too heavy and shady for the best good of the grass, which measured 3 inches high at that time, and was so



EXPLANATION.—*A A A, American Arbor vitæ hedge 10 feet high. B, border of flowers and dwarf evergreens, D, carriage drive, G, gravel, L, lawn,*

A STUDY IN GARDENING.

thick, green and handsome as lawn grass that no one not having seen the work go on, and kept the dates in mind, would believe it was not a lawn of several months' standing. Done rightly at the right time, a bare spot can soon be covered with a carpet of green.—N. E. Farmer.

Sweet Winter Flowers. The Allium Neapolitan has given me good satisfaction for bloom in winter. I treated mine just the same as Freesias, both winter and summer; in fact, I believe like them, they may be potted at any time, just according as you want them to come into bloom. I repotted them this year the first week in October; last year not until November, perhaps the middle of the month. They soon put up their tiny heads. I plant a goodly number of the small bulbs in a 6-inch pot. They bloom so well, and never fail to bloom, in such fine clusters of flowers, pure white, and dainty enough to set before a queen. When they have done blooming, and perfect their growth, beginning to show signs of wanting to rest, I withhold water, and when dry I remove them to the cellar, there to remain until the next fall. I would not be without these sweet things, and they are not expensive.—Floral Instructor.

About Tomato Culture. Our favorite Tomato this year, as last, has been the Mikado. The fruit is not all perfectly smooth, but it is so much larger than any other kinds, and so early, it gives the most money. We are in great need of seeds saved from these finest specimens of the Mikado. We saved enough ourselves to make perhaps a quarter of a pound from the best specimens. It is a pretty hard matter to take your very largest, finest, and most beautiful Tomato early in the season, and sacrifice it for the seed; but when you do it, you have got some seed that will probably be worth something. Judging from our experience in Tomatoes this last season, I should dislike to take a five-dollar bill for that quarter of a pound. Almost everybody else complained that they could not raise Tomatoes. We had an enormous crop. While Tomatoes were rotting for everybody else, ours did not rot a particle; and as they were on the creek bottom, they suffered comparatively little from drought. One thing may have counted in our favor respecting freedom from rot. Early in the season, great whopping Tomato worms came in such numbers that I directed one of the boys to make it his business to carefully pick off every worm daily. Just before the Tomatoes came into bearing, the worms became scarcer and scarcer; and when we gathered our fruit there was almost not a worm.—Gleanings in Bee Culture.

Spring Pruning for Grapes. A correspondent of a Western paper advocates late Spring pruning as a guard against being caught by a late frost. If pruned in the fall or winter, the cut surfaces heal, and the whole sap force is early in the spring directed to the buds and bearing

wood on the closely pruned vine. But if the vine is left unpruned till the sap is well up, it then has the whole vine to expend its force upon and the development of the fruit-bearing wood is considerably later. By delaying pruning till spring he has escaped all loss from late frosts for years. Injury from bleeding when pruned in the spring after the sap starts has been greatly overestimated. A few winters since the snow drifted in and completely filled the writer's vineyard before the trimming had been done. It staid there all winter, keeping the frost out of the ground. As the ground did not freeze the sap started in the vines before the snow was all gone, and on trimming them, a few days later, they bled severely; but they bore a good crop that year, and since, and gave no evidence that they were in any way injured by the severe bleeding. Two years ago they were caught in a late frost after the fruit buds had considerably developed, and as a consequence there were no grapes that year. Had this plan of late pruning been pursued the crop might probably have been saved.

Chrysanthemum Cuttings. By the time the late varieties are in perfection many of the earlier kinds have growth in condition for propagation, and it is not good practice to defer attending to them, although creditable plants may be obtained from good cuttings taken as late as February or March. Plants are usually most satisfactory when raised with but little assistance of artificial heat, as in a cool frame, for instance. My mode of treatment is to insert the cuttings singly in small two-inch pots., filled with fine sandy soil, plunging the pots in fine coal ashes placed in a shallow frame, which should be elevated upon a bed in a house where artificial warmth is only employed to exclude frost. Under this method cuttings take more time to root, but it is always attended with good results.—English Exchange.

Electric Light and Plants. The electric lighting of the winter palace at St. Petersburg has been accompanied by some unexpected and disagreeable results, the many beautiful ornamental plants which are used for decoration having been found to suffer greatly from the effect of the new system of lighting. It appears that the complete illumination of the room for a single night is enough to cause the leaves to turn yellow, dry up, and ultimately to fall off. The celebrated collection of Palms at the palace have more especially suffered serious damage. The sudden change from the sunless days of the northern winter and from the subdued light of the plant houses to the blinding light of the banqueting halls is supposed to be the chief cause of the above. It has been shown beyond a doubt that the rapidity of the injurious action and its amount are in direct proportion to the intensity of the illumination, and plants standing partially shaded from the light, or in niches or other places, are found to remain uninjured. The artificially heated atmosphere of the rooms, tends without doubt, to greatly intensify the injurious effects of the light, and if the plants could only be surrounded by a steamy atmosphere, such as that in which they are grown, the effect would be minimized, if not obviated.—Gardener's Chronicle

Celery in Beds. In certain cases there are decided advantages in this method. The plan is simply to set the plants in trenches, which are three or four feet in width, and excavated to the depth of three or four inches. The plants are set in rows crosswise of the bed; six inches apart in the row; rows being a foot apart. This is close planting, but if manure and water are used freely as fine Celery may be grown as by any method whatever. One banking is all that is contemplated, as White Plume is the variety to be used, or if any other is preferred, more space must be left, so as to supply more earth, or tile may be employed. The most apparent advantages of this plan over planting in rows is that it admits of irrigation. If water can be had for a small area only, it can be economized and utilized to the fullest extent. At least fifty thousand plants can be grown on an acre in this way, which is better than can be done by the ordinary method. The cost of handling is about the same in either case, but when grown in beds, it is comparatively easy to protect the Celery from freezing, with straw. Those who propose to irrigate their Celery will find this plan a good one to adopt, with a part of the crop at least.

Root Louse (Phylloxera) in California. We learn that the Phylloxera has at length become nearly as bad on the roots of the Grape-vines in California as in Europe. In some localities the plantations are nearly ruined. They are, however, doing as the wide-awake vineyardists of France are doing, grafting on the American stock. The varieties of the species Riparia are found to be the best. The insect attacks these vine roots as well as the roots of the European, but on account of the very fibrous rooting character, they do not suffer much. The young roots grow faster than the troublesome little insect can follow them. Hence these species of the Grape are known as resistent Grapes. Julius Dressel, of Sonora, in California, has seventy acres grafted on many varieties of the Riparia section that are thriving wonderfully, and grafting Grapes will soon be a leading industry in California.—Gardener's Monthly.

Kitchen Garden Walks. Kitchen garden walks are often neglected. This is a mistake, as a substantial tidy walk in a vegetable garden is always valued. I do not approve of very wide walks here, if the walks are capable of accommodating two abreast, or allowing two wheelbarrows to pass each other without having to break down the edging, nothing more need be desired as a rule. There is no economy in deficiently made walks, as they will take much more labor to keep them in repair than it would take to make them properly, and it is astonishing how little repair a thoroughly well-made walk requires. If the foundation is soft dig it out, as it is impossible to keep up a walk over a marshy bottom. Go down two feet if necessary, and in all cases of a deficient foundation go down eighteen inches at least. Put plenty of large stones in the bottom, and make the surface of some material that will bind. Keep the middle three inches higher to every yard width of the walk than it is at the sides, and there will always be a comfortable footway no matter what the weather may be. Edge with Box, tiles, stone, or wood, which should also be kept in trim.—Gardening World.

Vegetable Products on the Table.

Corn Cake. One quart of sour or butter-milk, a little salt, a piece of butter half the size of an egg, cornmeal enough for stiff batter, one teaspoonful soda, and for a rich cake add two well-beaten eggs. Bake three-quarters of an hour.

Fried Pickled Cucumbers. Take large Cucumbers from the pickle, and soak in tepid water until the salt is well out of them; slice one-third of an inch thick, roll in flour, and fry in butter. These are very nice with cold meat or beefsteak.

Orange Custard. One quart jar of juice, three eggs, tablespoonful of arrow root or corn starch, salt. Heat the juice boiling hot, pour on the beaten eggs mixed with butter, sugar, and thickening, and stir while it thickens; then pour into baked shells of pastry.—Pacific Fruit Grower.

Apple or Cranberry Pie with Whipped Cream. Cook the fruit as for sauce, the Cranberries with or without skins, whichever is preferred. Make a nice pie-crust; put the fruit in, place in oven to bake. When done, spread over the top whipped cream, flavored with vanilla. These make most tempting and delicious dishes.

Apple Hedge Hog. Two pounds of Apples pared and sliced, one and a-half pounds of white sugar, one-half pint of water. Boil all together till quite thick, and keep stirring to prevent burning. Put into a mold, turn out when cold, stick all over it split almonds. Serve with whipped cream.—Rural New Yorker.

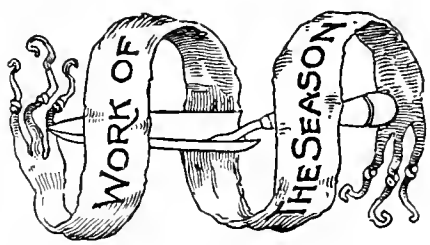
Potato Fritters. Boil and peel six large Potatoes or a dozen smaller ones; mash them well, and add four well beaten eggs, a little cream or milk, chopped Parsley, chives, salt and pepper, and mix the whole together. Raise on the end of a knife about a teaspoonful of this paste, and drop it into a pan of boiling lard or butter, when the paste will swell and form a light fritter.

Cabbage Salad. Three eggs well beaten, one tablespoonful of sugar, one tablespoonful butter, one teaspoonful mustard mixed with one-half a small cup of good vinegar, salt and pepper, one pint finely cut Cabbage. Melt the butter in a tin on the stove, mix the other ingredients together and put into the pan; when hot add the Cabbage, keep stirring till it comes to the boil. When done, put in a dish; garnish with small green and yellow Celery tops.—Rural New Yorker.

Fruit Tapioca Pudding. Pick over and wash three-fourths cup of tapioca, cook it in one and one-half pints boiling water one hour or until transparent; add one saltspoonful of salt, one-fourth cup of sugar, one cup of any kind of fruit or of grated Pineapple, two Bananas and two Oranges cut fine. Serve with sugar and cream. Tapioca should be stirred at first to prevent lumps. The pearl tapioca does not need soaking previous to cooking. Fresh Pineapple needs cooking a little before adding to the tapioca; the canned does not.—Country Gentleman.

Cooking Prunes. Pour boiling water over the Prunes, let this remain half an hour, when the Prunes will be soft so you can remove the seeds. The seeds removed, wash the fruit, and to each quart add a teacup of sugar, or more if you like them very sweet. Cover with boiling water and stew until tender, keeping on plenty of juice. When done add any flavor you may wish. You will find them much nicer by taking out the seeds, and this enables you to find the wormy fruit, which makes Prunes objectionable. Prepared in this way they make excellent pies and the addition of more sugar gives nice preserves.

Squash Jam. Take a full-grown Squash, peel, cut in half, and scrape out the seeds; then cut them into inch wide strips, and slice these as thinly as possible. To every pound allow 1 lb. of sugar, half-a-teaspoonful of salt, and one lemon. Chop the rind of the Lemons very finely, removing the white pith, and cut them in slices, avoiding the pips. Put the Squash, lemon-rind and slices, salt, and half the sugar into an earthenware pan; cover, and leave it to stand all night. In the morning strain away the liquid, and boil it for twenty minutes with the remainder of the sugar; then add the pieces, etc., and boil again until each piece looks perfectly transparent, and when turned into jars it will look much like marmalade. I find this recipe makes a most delicious jam.—English Farm and Home.



HOUSE PLANTS.

Begonias of the free-blooming sorts should now be in their glory. Water the plants but moderately.

Camellias are impatient to close confinement in a dry atmosphere, hence should have air freely (but not cold draughts), in all suitable weather, and a frequent sponging of the leaves on both sides.

Dutch Bulbs should continue to be brought in from the cellar or pit. At this season they grow and bloom remarkably well. Such as are in glasses must have the water kept properly replenished.

Fuchsias that have been at rest should be started up, if this has not yet been done. Those that have made some growth may have slips, if there be strong ones, taken from them, to root. As to pruning, the state of the plants and one's taste should govern. As a rule, we think old plants are more satisfactory for being cut back at this season and grown in a bushy form. Young plants usually reach a better shape for the first year, with little cutting back, unless it be main shoots occasionally, for inducing symmetry. Guard against their becoming pot-bound; growth must be constant.

General. From now on it is easy to keep healthy plants looking well. But it will not do to grow careless, either as regards general requirements, or caring for them in the cold nights yet to come. These fresh movements in growth must be backed by treatment to ensure the formation of healthy roots and wood. On Watering see under Plant Culture Under Glass.

Geraniums, especially of the Scarlet or Zonale class, should be showing fine slips for rooting now. All the plants, with the exception of some wanted for present bloom, may be severely cut back for propagation; the slips of such will make fine plants for bedding, while the old ones will come out well for summer bloom.

Heliotrope slips struck now make fine plants for summer. Shift old plants as they get pot-bound.

Oleanders. If one cares for flowers in May, start up the plants now. As growth begins, water well and give some stimulant to the roots.

Plants in cellars and pits may well be treated to air occasionally for hardening them. If the earth in the pots or boxes is very dry, give water.

Pruning. As a rule amateurs are too afraid of the knife. In soft-wooded growths, one can hardly prune too freely for good shape; with it, fine, bushy forms, springing from the ground, result; without it, long-legged plants that cannot be handsome.

Roses, of the monthly section, will begin to show growth and bloom. Avoid keeping them too warm; give a good sunny position. By all means keep down the green-fly. Hybrid Perpetuals, potted in the fall and wintered in pots, may come into heat, and will quickly start up. When buds appear, a stimulant like liquid manure becomes desirable.

Sweet Alyssum. Propagate from slips or seed.

Seed Sowing. Kinds like Mimulus, Maurandia, Ice Plant, Sensitive Plant Snapdragon and Chinese Pinks should now be sown for good plants for spring and

summer decoration. All annuals may be sown in boxes for early bloom, by the end of the month.

LAWN AND FLOWER GARDEN.

Bedding Plants. Arrange early for whatever stock will be wanted, whether you raise your own or buy. If to be bought, contracts may be made with florists thus early at reduced rates, usually.

Hedges of deciduous kinds should receive their winter pruning in mild spells. Mice often do great damage by girdling the trees under the snow line. Prevent by tramping down the snow occasionally.

Labels, stakes and like necessaries to the garden should be made or bought now, for spring use.

Pansies. If no stock has been brought over, by sowing seeds now, in moderate heat under glass, good spring-blooming plants may be raised.

Plans. Now should be a good season for reading and planning. The main operations to be carried out the coming season should be studied and decided on before outdoor activity opens. Well-laid plans not only tend to the making of better gardens, but they are economical, in the sense of allowing the work later to be turned off with the best possible advantage.

Seed Sowing. At the South, hardy annuals may be sown out-of-doors. In the North, annuals for specimens and summer bedding such as Balsams, Cockscombs, Globe Amaranths, Portulacas, Schizanthus, Phloxes, Brachycomes, Stocks, Tropæolums, Cobæas, Lophospermums, Acroclinums, and the kinds named under The House Plants, may be sown in heat this month.

Shrubs. In the South, pruning of these may now take place, but further north, next month will be about the right time. In approaching these with knife and shears it must be borne in mind not to treat all kinds alike. For instance, the class including Roses, Hardy Hydrangea, Burning Bush, Coronilla, Amorpha, Hypericum, Althæas, Late-flowering Spiræas, and a few others that bear their bloom on the new growth of the season, may be cut back very severely at this season with good results. But about all other shrubs besides these named produce their flowers from buds on the old wood, and to prune these now is to prune away just so many flowers. On such little more pruning should be done at this time than to cut to improve the general shape, leaving most of the work to be done just after the blooming season, some months further along.

PLANT CULTURE UNDER GLASS.

Angle-worms in the soil increase rapidly as sun-heat increases. The perfect remedy: soak the soil thoroughly about once a month with lime water.

Carnations for next winter's flowering should all be struck from cuttings before this month is out. Later then, keep the young plants robust by free airing. Flowering plants should be gone over and restaked, tying them out larger if needing this.

Cytisus, when done blooming, should be cut back.

Insects come out with great rapidity at this season of high sun-heat and closeness No pains must be spared to keep them down. Prevention is better than cure, hence the usual remedies of fumigating twice a week with tobacco smoke, or the use of nycotyl (see page 98), for Green-fly and others; syringing daily for Red Spider and so on, in houses of high heat, must not be neglected. Scale and Mealy Bug increase more slowly than these, but do not yield to treatment so well. Hand-picking, washing or brushing, the best remedies.

Mignonette is one of the annuals that may be sown now to good purpose. Then the plants will, with the summer months to come, make rapid growth, and by the time of mild weather will be much prized for window and conservatory decoration.

Orchids that begin to grow during the time they are in flower should be shifted immediately the beauty of the flower is past. The best materials for the shift are good fibrous peat, sphagnum moss, broken crocks and charcoal. Aerides, Vandas, Saccolabiums, Dendrobes, Ccelogynes and several other genera do best in Sphagnum with small crocks or sharp sand. Cattleyas, Lælias, Oncidiums and Odontoglossums do equally well in peat mixed with crocks and a few bits of Charcoal; whilst some do best in a mixture of peat and moss.

Pelargoniums are in their making time now. Water freely, especially in warm, bright days, to set every rootlet in action. Overwatering is bad, however, causing, as it does, spotted leaves.

Potting. All young slips should go into pots as soon as roots appear. Use small pots, and light, rich soil, potting rather firmly. In potting or shifting plants, place broken pots or gravel in the bottom of every pot larger than three inches across, for drainage. In pots six inches or more across, there should be on top of the hard drainage a layer of sphagnum or hay before filling in soil, to keep the lower drainage from clogging.

Roses. From now on is a favorite season for propagation. Select the cuttings from the best and strongest wood of recent growth; a bad cutting must make a bad plant. From the time the cuttings are put in until the young plants are fit to set out, they must never be neglected for want of water, as this would stunt them, a condition that is always bad.

Salvia Splendens as to stock plants, must not have the growth greatly checked at any time in the winter, for if so, it will be difficult to get up good plants for next year. Ample root room, and a cool temperature, suit the plants at this season.

Stove plants need general going over at this time or a little later. Those that have been blooming in the winter require to be cut back, and encouraged to break; then to be shifted to larger pots if needful, or have top-dressings. Those in flower must be kept dry overhead.

Verbenas detest any but fresh, sweet soils. If the plants are at a standstill, by shaking out and repotting in rich, fibrous new earth they will improve quickly. Keep near the glass and give plenty of air.

Watering. Let no plant suffer from dryness, none from over-watering, to avoid both of which needs a watchful eye. Notice which kinds dry out soonest—there is a great difference as regards this, also in which parts of the house dryness is first to be met. To water all kinds alike is to do great injustice to some.

FRUIT GARDEN AND ORCHARD.

Currants and Gooseberries. If not yet pruned and manured this should be promptly attended to.

Eggs of the tent caterpillar can now be readily distinguished and should be promptly removed. They can be found deposited in clusters near the ends of twigs.

Firming the soil, as soon as ever it thaws, over the roots of Strawberries or any other plants or shrubs set in the fall, by tramping, is a good stroke in early spring.

Grape Trellis. Repair if they require it. It will pay to paint them, and now is an excellent time to perform such work. If any vines were not pruned in the autumn, do it in mild spells now.

Manuring. Top-dressing such orchards as are not growing with vigor may now be done. Spread the manure, which should be old and fine, evenly.

Old Trees to have all accumulations of moss and loose bark scraped off, and given a wash of soft soap, mixed with enough water to apply with a brush.

Pruning of fruit trees to be proceeded with whenever the opportunity offers, selecting a time when the wood is not much frozen.

Recording maps of the orchard and fruit garden should be kept to ensure against loss of names and confusion, by the accidental losing of labels. Such are easily made. Use smooth, strong, heavy paper, striking lines and cross lines as many as there are rows of trees or plants, and then write the name of each variety, clearly, in its proper place.

Winter Covering of Strawberries and the like will require looking after to see that it is not blown off.

VEGETABLE GARDEN.

Asparagus Beds. If not already done, to be given a good dressing of stable manure. A dressing of salt can also be applied with benefit in localities distant from the sea coast. Two or more pounds of salt to the square yard is considered ample.

At the South, Asparagus, Rhubarb and Horse-radish beds may be made. Potatoes may be planted, and in the more southern parts the seeds of Squashes and Melons, provided some means of protection are at hand against hard weather. The most successful gardeners are always ready to take some risks in starting their crops early. See last month under this head.

Cold Frames require close attention as milder weather approaches. Open when the weather is not severe, harden off their contents for early setting.

Lettuce sown in a box in the window, hot-bed or green-house now will give nice plants for frames or a warm spot in the garden in April, to mature in May. Curled Silesia is one of the best for early.

Manure for garden use and hot-beds to be accumulated. Turn the heap as often as it becomes hot.

Mice often prove troublesome around hot-beds, cold frames, etc. A few traps should be among them at all times, and thus prevent a more serious loss.

Onions. If these become frozen, cover with straw or salt hay, to prevent alternate freezings and thawings.

Rhubarb can be easily forced from now on by covering the roots with boxes or small barrels, and covering well with heating material.

Root Crops. Such as Salsify, Parsnips, etc., to be dug whenever the ground is sufficiently thawed.

Seeds. Stock on hand to be promptly overhauled, lists to be made out of what is wanted, and the supply procured at once.

Trenching and Draining of unoccupied land to be proceeded with whenever the opportunity offers.

Vegetable Cellars. Keep as cool as possible, by airing freely in all but freezing weather. Remove promptly all worthless vegetables.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus in forcing frames or pits should be freely aired whenever possible. Maintain rapid growth by attention to heat, watering and ventilation, and so ensure tender shoots. Roots for succession may now be started into growth.

Cucumbers require attention as to stopping all side shoots at the second joint and to the fertilization of the flowers. Maintain a temperature of 65° or 70° by night, with 10° or 15° higher by day. Give air whenever possible, but avoid cold draughts. Seeds may be sown and beds prepared for later crops.

Dandelion roots lifted and placed in boxes may be brought into growth at intervals to ensure a succession.

Grapery. Keep the late houses as cool as possible by airing freely in all but stormy weather. Houses just started, to be given a temperature of 50°, gradually increasing as growth commences. Vines in bloom require close attention to avoid damp, which will certainly destroy the flowers. In the earlier houses thinning is in order as soon as the berries are the size of small Peas.

Lettuce. Water sparingly during dull, damp weather; air freely as the opportunity offers. Planting to be made for successional use. Seed may now be sown to produce plants for early spring use. The Early Forcing Head and Boston Market are desirable for this purpose.

Mushrooms. Manure to be prepared and beds started for successional crops.

Parsley growing in beds or boxes to be given liquid manure at least twice a week.

Peaches and Nectarines. In cool or slightly heated houses to be pruned, tied up, and the larger branches and trunks painted with soap and sulphur. Keep the houses cool by airing freely. When in bloom, fertilize the flowers carefully.

Strawberries growing in heat may be given liquid manure at times, until the fruit shows indications of ripening, when it should be withheld and the fruit exposed to the sun and light as much as possible. Another lot may be brought in for succession.

POINTS ABOUT POULTRY.

Worth Noting. With Melons and garden vegetables we have obtained the best of results from the use of hen manure.—Poultry Keeper.

Crude petroleum does not evaporate so quickly as kerosene. It is therefore better as an application upon henroosts to destroy lice, since it clogs the insects' breathing pores more certainly, while its odor is equally as hateful to them as the latter.

After snow storms always clear some portions of the ground around the hen-houses for the comfort and health of the stock. Standing on snow is not as good as on earth. If the fowls cannot get off the snow, they crowd too much in the houses.—Rural New Yorker.

Order Some Gourd Seed. The Mirror and Farmer remarks that when a hen goes on the nest, and places her warm body close to a cold glass nest-egg she is liable to contract cold. Glass eggs should not be used in winter. We have known hens to roll such nest eggs out of the nest, as they soon learn to beware of the cold sensation; but they also learn to roll all other eggs out of the nest as well, which may cause them to freeze. The best nest eggs are the nest-egg Gourds, which anybody can easily grow, the seeds being for sale by all reliable seedsmen. It is better to have no nest eggs than to use glass or porcelain at this season, while stale eggs are abominable.

A Neglected Income. One of the little leaks is the neglect of the poultry droppings. A farmer will spend a day in carting some fertilizer for which he has to pay a good price, when for the same time spent he might have had something just as valuable by carefully collecting the droppings from under the roosting fowls. The manure from fifty fowls, properly composted with dry loam and swamp muck, in the proportion of one part of the former to three of the latter, should furnish hill dressing for at least two acres. Even the soil of the yard to which they are confined if taken off once a year to the depth of two or three inches is an excellent fertilizer.—Monitor.

The Proper Time to Market. There is such a thing as hatching out the chicks too early. In order to give an idea of the prices, we mention the New York market quotations for broilers, during several months. January and February those of from two to three pounds per pair, sold at from 25 to 27 cents per pound, dressed, while those from three to four pounds sold at 18 to 22, but in March, those of three to four pounds per pair sold at 25 to 28, those of two to three pounds at 30 to 35 cents per pound, and four to five pounds per pair at 20 to 25 cents. April and May the prices were for dressed broilers, two to three pounds per pair, 45 to 50 cents per pound; three to four pounds 30 to 35 cents; four to five pounds 25 to 28; while even in June the prices were as high as 30 cents per pound for those of large size, the smaller sizes not at that time being in demand. A chick should weigh a pound when six weeks old, and two pounds at ten weeks.—Mirror and Farmer.

Poultry for Market. There is no hardier fowl than the Light Brahma and no breed that lays so many eggs in the winter. If I wanted the best broilers, I would use a white Plymouth Rock cockerel on Light Brahma hens. While the Brahma cockerel on Wyandotte hens would be good, I do not think this cross would give as many eggs as the other. As to whether it will pay to go into raising poultry for the Eastern markets in Indiana or other central States, my judgment would be that the ability to raise cheaper there than in the East would more than cover the express charges to Eastern markets. But Eastern broilers bring the most money in New York, for the reason that the breeder is where the goods can be got in a few hours when wanted, whereas much time will be required in transit from the West. When the broilers are grown, and you wish to prepare them for market, or "finish them off," as the saying is, feed corn and barley, some charcoal daily, and Celery tops, or other fresh green matter.—Farm and Home.

INQUIRIES AND REPLIES

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

578. **Land for Strawberries.** I intend to embark in Strawberry raising, and have both good high land and good low land. On which would you advise me to plant?—C. C. G., *Venango Co., Pa.*

579. **Palms for Room Culture.** Could you give the names of some of the more suitable varieties? Do the plants require any special preparation to fit them for room culture?—Mrs. G. A., *Monroe Co., N. Y.*

580. **The Niagara Plum.** Is this as hardy and productive as Lombard? How much earlier?—W. B. H.

581. **Heating Hot-Bed with Lamp.** Is there any way of heating a small hot-bed in this way? Please oblige by answering.—J. M., *Homewood, Pa.*

582. **Keeping the Hibiscus Dwarfed.** I have plants six or eight feet high growing in half barrels, with the roots running through beneath into the soil where they are standing. Would it be safe to cut away considerable of the roots with a view to keeping down the size of plants? Similar treatment of my Oleanders does not seem to hurt them, and permits of their being grown in smaller earth receptacles.—I. M. P., *Castroville, Texas.*

583. **"Variegated Umbrella Tree."** I would be glad to know the botanical name and treatment of this plant. With the plain variety I have always had excellent success, but with this one not.—S. L. A., *Roslyn, N. Y.*

584. **Unhealthy Geraniums.** The foliage looks healthy and they appear to be doing well, but whenever a bud starts out it will grow but a short time and blast and die; they do so every time one starts.—R.H.C., *Macon City, Mo.*

585. **Fertilizers for Pot Plants.** Can you tell me the best nourishment for my house plants?

586. **Worms in Flower Pots.** What will kill life in the dirt? I am annoyed by angle worms.—Mrs. W. M.

587. **Musk Melon for Forcing.** What is the best large Musk Melon to start under glass and transplant, and what is the best way of doing it?

588. **Storing Cabbage.** What is the best way to store Cabbage for winter or spring sales, especially for getting at in severe weather? Would it do to trim, put in layers in a cold cellar and cover each layer with sand?

589. **Cauliflower Query.** As Cauliflowers are usually shipped in barrels, about how many fill a barrel on an average?—S. W., *Belleview, Mich.*

590. **Lice on Fruit Trees.** There are many lice on my Cherry and Apple trees. What will kill them?—S. L.

591. **Mortgages and Fruit Culture.** I would like to extend my orchard somewhat, and also go into Grape growing to the extent of two or three acres, but to do this must mortgage my farm a little. Would you advise it? Am 13 miles from Detroit.—G. S., *Wayne Co., Mich.*

592. **Scraping Tree Bark.** Is it considered a benefit or an injury to scrape the old bark from trees. It certainly affords a harbor to insects.

593. **Moss on Trees.** What do trees require to keep them clear of moss?—W. P. R., *Tioga Co., Pa.*

594. **Amaryllis from Seed.** Can some reader tell me when, where and how to plant seeds of Amaryllis hybrida?—J. K., *Greenfield, Iowa.*

595. **Pruning an Arbor Vitæ Hedge.** My hedge is two feet higher than I like it; total height five and one-half feet. Would it injure it to reduce as desired?—B. B. W., *Hayesville, Ohio.*

596. **Plants for Small Conservatory.** I have a small conservatory directly off from my sitting-room, which is heated with a coal stove. I find Geraniums will not succeed well; the temperature is not high enough to secure blossoms during midwinter. Ferns, Primroses, Farfugium and English Ivy do admirably. Will you kindly suggest a half dozen plants that will bloom satisfactorily in a slightly lower temperature than Geraniums require.—E. C. D., *Providence, R. I.*

597. **Propagating Hydrangea Paniculata.** Will you give me some points on propagating this shrub, and oblige—S. E. C., *Rockford, Ill*

598. **Green Manuring.** I have a piece of deep sandy loam somewhat deficient in vegetable matter which I desire to improve by plowing under *several crops* of green manure. What will best fill the bill? Am advised to employ Rape but don't know about it, or how many crops in a season.—G., *Kankakee Co., Ill.*

599. **Fertilizers for Strawberries.** A half acre patch of mine will come into bearing this season. *(a)* What would be the cheapest and best commercial fertilizer to apply? *(b)* When and how much? *(c)* Could it be applied on top of the mulch of straw?

600. **Fertilizer for Raspberry.** I have Raspberries partly set in the spring of 1887, partly the fall previous. What commercial fertilizer would you recommend for them and how to be applied?—E. H., *Crawford Co., Pa.*

601. **Pears and Plums for Iowa.** Kindly name two or three varieties of the earliest and best of each for general planting.—J. J., *Iowa City, Iowa.*

602. **Coal Tar and Peach Trees.** Should like to know proper time to apply coal tar to Peach trees. A correspondent recommends it but does not say when to apply.—F. W. R., *Bradford, Tenn.*

603. **Plums in Sod.** On some thin, gravelly land I sowed orchard grass last spring. How would it do to set Damson Plums on this piece, 16 feet each way and not cultivate for a few years to save the grass.

604. **Shropshire Damson Plum.** Is this variety more prolific than the old Blue? Would it succeed here? The old Blue pays here.—A. B., *Mt. Washington, Ky.*

605. **Lime for Grapes.** Is lime beneficial or injurious to Grape-vines when spread thinly and turned in?—J. M. K., *Lindsay, Ontario.*

606. **Quince on Muck.** Will Quince do well on muck that is somewhat moist underneath the surface?—A., *Battle Creek, Mich.*

607. **Increasing Nut Trees.** I should like to know how this is done. I cleft grafted nine Chestnuts with the Paragon and only got one to grow, and this made a fine growth.—E. C., *Euclid, Ohio.*

608. **Gooseberry for Maine.** What would be the best one for us to set out in this State?—C. J. D., *Weld, Maine.*

609. **Peach from Northern China.** D. B. W. speaks of a hardy Peach or Peaches from Northern China, lately introduced. Do you think it would prove hardy here 45° N. Latitude, where we have 45° below zero nearly every winter?—W. S. W., *Shawno, Wis.*

610. **Lettuce in the Greenhouse for Profit.** Will you please give instructions on forcing this crop in the greenhouse, and oblige P. H., *Sand Beach, Conn.*

REPLIES TO INQUIRIES.

510. **Grape Question.** The Worden Grape is with us just ten days earlier than the Concord. The White Ann Arbor fruited for the first time last season, but was taken by the birds, so I had no opportunity to test it. Sweetwater I have not had for twenty years, hence have forgotten how early or late it is; nor do I care, as Moore's Diamond is equal to it in quality, with the addition of being larger and hardy.—S. MILLER.

526. **Wormy Apples.** These are caused by the larva of the insect commonly known as the codling moth. The perfect insects, which are small moths, appear in the greatest number on the warm evenings, about the first of June, and lay their eggs in the blossom end of the small fruit. In a short time these eggs hatch and the worm or grub eats its way until it reaches the core, when the fruit ripens prematurely and drops to the ground. Then the insect leaves the fruit and creeps into the crevices underneath the rough bark or other hollow places on the tree, and spins its cocoon. In this it remains until the ensuing June, when it emerges as a perfect moth. The readiest way of destroying them will be to gather up and destroy all fallen fruit daily. It is said that if a piece of woolen cloth is tied around the trunk of the tree as soon as the fruit commences to fall the worms will collect underneath it and in this way many may be caught and destroyed. Cleaning the tree by scraping and washing the trunk and larger limbs will also destroy many.—C. E. P.

525. **Preparing for Strawberries.** In order to secure a satisfactory result the Strawberry must be given a deep, well enriched soil, and if possible choose land on which some hoed crop, such as Potatoes, Beets or Celery, has been grown the year previous, and this should be given as much well decayed stable or barn-yard manure as can be well worked under with the plow. Plowing should be done as deeply as possible and then a thorough harrowing given, and if convenient finish by rolling, as this will make it much easier to mark out the rows, which may be placed about two feet apart. The plants may stand one foot apart in the row. Planting should be done as early in the spring as possible, just as soon as the ground can be properly prepared and just previous to or after rain. In planting use a dibble, and be careful to keep the roots straight with their full length in the ground. Do not set the plants deeper than they previously stood, and firm the ground around the roots thoroughly. After growth commences the plants must be freely cultivated, and all runners promptly cut off as soon as noticed, until the ground becomes frozen in the fall, when a mulch of straw or salt hay should be given. This mulch should be removed from the crowns of the plants early in the spring by means of a short stake. The varieties usually grown for market purposes are the Wilson, Warren, Sharpless and Manchester. Charles Downing and Kentucky are among the best varieties for home use, and a near-by market, but rather soft for shipping.—C. E. P.

576. **Cotton Cloth for Hot-beds.** Use the thinnest unbleached muslin—costing from five to six cents a yard—and tack it tightly over a frame to fit closely the top of the hot-bed. Into a pint of unboiled linseed oil beat one egg thoroughly, and with a paint brush, free from paint, give a coating to the top side of the muslin. The oil makes the cloth water-proof, and the egg renders it translucent. When very cold, or at night, spread an extra cover over the hot-bed. With such a cover there is no danger from sun-burning, and the plants thrive admirably.—A. H. E.

572. **Pruning the Quince Tree.** Quinces, as a rule, do not need much pruning; they merely require the branches to be kept open. The falling off of the fruit before it comes to maturity is probably due to some defect at the root. No amount of pruning will induce your tree to be fruitful; what it requires is more root room and more moisture. I have never seen anyone grow Quinces better than cottagers who plant the trees by the side of a hole into which they throw slops from the house, and make heaps of garden refuse over the roots. Trees so treated I have seen bending down with fruit in the autumn.

533. **Blanching Celery.** Celery keeps best when stored in a trench about ten inches wide and of a depth exactly the height of the Celery. It should be dug on dry days only, and placed in the trench as near perpendicular as possible. No earth should be taken with the roots, and the plants should be packed closely. That which is wanted for use in December should be placed in the trenches before the first of November. It should then be covered with shutters, placed in such a position as to shed the rain, and on the approach of cold weather gradually covered with straw, salt hay or leaves to keep it from freezing. This covering should be very gradually applied in order to prevent heating. Thus treated it will keep well and blanch perfectly. For use from the first of January and later on it should not be put in the trenches until after the first of November, and care should be taken to apply the covering gradually until about the first of January, when it should be about a foot in depth. Celery for winter use should never be banked up when growing, but merely handled, and this consists in drawing only enough earth around the plants to keep them in an upright position. This handling should not be done until towards the end of September.—CHARLES E. PARNELL.

570. **Propagating Large-leaved Begonias.** These, which are often termed fibrous-rooted, or ornamental-foliaged, Begonias, to distinguish them from the flowering tuberous-rooted section, are increased by layering the leaves on sandy soil in a moderate warmth. Take leaves that are fully developed, or nearly so—old battered leaves should be avoided—with not more than an inch of stalk. Cut through the principal midribs on the back of each in six or eight places, and with some very small hooked wooden pegs, fasten them down to the surface of well-drained boxes or pans of light sandy soil; or a few stones will answer the purpose almost as well as pegs. Place these in a rather close and moist house at about 70°, or on a gentle hot-bed, keep the soil just moist; shade from strong sun, and in two or three weeks roots and a small tuber will be formed at each cut, and shortly afterwards a tiny leaf will be seen to rise, forming the embryo plant. When these are strong enough, divide and pot them off singly, and afterwards shift on as required. About the best mixture in which to root the leaves is composed of equal parts of loam, Cocoanut-fiber, and coarse sand, with a little leaf-mold if this is at hand.—A. H. E.

552. **Wintering Pansies.** We think the safest course for you to pursue would be to retain the sash and protect the plants lightly with marsh hay, or, better yet, evergreen branches. Then about one month before Easter uncover the plants and transfer them with plenty of frozen soil into heat for forcing their bloom. Possibly as far south as your place they might be brought into bloom without the aid of artificial heat, but we hardly think so. They could also be grown under sash, but the management should be such as to prevent the perils of alternate freezing and thawing, a frozen up state being the preferable one. The danger would be from sun excitement, and it would be to prevent this that we would prefer the course suggested.—A. H. E.

578. **Land for Strawberries.** Plant on the higher land. Although this fruit delights in moisture at the root in fruiting time, still the plants are not found to succeed on damp alluvial soils, winter heaving being one of the chief difficulties. By having the soil rich and keeping it well cultivated even the liking for moisture peculiar to the plant at fruiting time can be well provided for, droughts notwithstanding.

581. **Heating a Hot-bed With Lamp.** In last year's volume, February issue, page 80, an engraving of an oil-heated hot-bed was given. The main features were back and front walls of double matched stuff against upright studs, the former being about a foot higher than the latter. On top of these the sash bars and sash reclined. In the bottom of the frame was a board floor, and on this an ordinary two-burner oil-stove for providing heat was placed. Over the stove and about three inches above it a piece of sheet iron was supported, which served to diffuse the heat outwardly from the top of the lamp. To further provide for the even distribution of heat a false bottom of matched stuff was placed across the bed about one foot above the lamp, forming a lamp compartment to the bed. This bottom extended to within three inches of the side of the bed all around and supplied the necessary openings for the heat to ascend at the outside of the bed, where most needed. Some large holes were bored about midway between the center and each side of the bed to further equalize the heat distribution. To this lamp compartment an outside door was provided through which to manage the lamp and for admitting the light current of air needed for combustion. The bottom of the bed which contained the soil or sand (to a depth of six or seven inches) was raised about 8 inches above the false bottom referred to.

542. **Black Walnut Culture.** Plant the nuts with the soft shuck on, about three inches deep, in rich, mellow soil, soon as convenient after they fall, and in the field where they are to grow permanently. This soft shuck is Nature's nutriment for the young plant. The Black Walnut, Hickory, Tulip, and the tap-root tribe generally are apt to be harmed by transplanting and cutting off the tap-root, however necessary that unnatural process may be to trees grown in the nursery and first started in beds. By cutting off the tap-root you may force out enough lateral roots instead to make it live, but not to thrive as it would otherwise have done. It is safe to study the habits of each kind of tree, and to follow Nature. To give one of many illustrations, the fine groves on the farm of Gov. Morton, in Nebraska, were planted in the manner above commended. These Black Walnuts were twenty-five years old when I saw them, some of them being four feet and two inches in girth two feet above the ground. This shows the Black Walnut to be a rapid grower.—B. G. NORTHRUP, *Clinton, Conn.*

541. **Hydrant Water in Rose Forcing.** This is not in any sense injurious when used for syringing Roses, but warmer water, or that more near the temperature of the house, would be preferable in case it could be obtained.—C. E. P.

542. **Black Walnut Culture.** In general they do well on any soil, but thrive best on one that is deep and rich. Plant one or two-year-old trees, and as early in the spring as possible. I would plant them in rows five feet apart each way, as by so doing a row of Carrots, Beets, or Parsnips, or some other root crop, can be grown between them until the trees require the space. As the trees increase in size, remove every other one from time to time, as occasion may require. The only culture that they require will consist in keeping them clear from weeds by means of the cultivator and hoe. There is only one kind. Difference in color is owing to the difference in soil. The better the soil, darker the color.—C.E.P.

543. **Croton Carrieri.** This is described by John Saul, of Washington, D. C., in his Plant Catalogue for 1887, as being a superb Croton, with finely-variegated foliage.—C. E. P.

544. **Triumph Aster.** Seed of this variety can be obtained of J. M. Thorburn & Co., No. 15 John Street, New York.—C. E. P.

546. **Sweet Lavender.** The Sweet Lavender *Lavendula vera* is a low shrub, growing about three feet high, a native of the South of Europe. The leaves are narrow, of a heavy green color, and the flowers are borne upon long and slender spikes. They are delightfully fragrant, owing to a volatile oil, which in various forms is used as a perfume, and on account of its stimulant, aromatic qualities often used in medicine. It can be increased by seeds, or cuttings, the latter taking root very easily. Seed should be sown as early in the spring as possible, in a well-drained pot or pan filled with turfy loam. Sow thinly, cover slightly, and place in a warm, moist situation, as close to the glass as possible. As soon as the young plants are strong enough to handle, transplant into other pans or boxes similarly prepared, placing them about two inches apart, and grow on until the weather becomes settled, when they can be planted outside. They will do well in any good garden soil. In this vicinity the plant is rather tender, and requires the protection of a cool cellar, cold frame or greenhouse during winter, so that the above directions apply to its care when grown as a border plant.—C. E. P.

547. **Arbor Vitæ Hedge.** The American (*Thuja occidentalis*) is the very best variety. The plants should be placed from one to three feet apart, the distance depending upon the height of the trees, as for instance trees, a foot in height should be placed one foot apart. As there is no particular difficulty in transplanting them, you can procure such sized trees as seem most suitable for your purpose, and plant about the 1st of May. It is best to open a trench, or work in a supply of well-decayed manure before planting. Keep well cultivated for a year or two, and trim into shape at least once a year.—C. E. P.

550. **Salt for Quince Trees.** I consider salt of little or no value, and would not bother to apply it. Rather plant in a deep, well-enriched soil, and keep them clean and free from weeds by good cultivation. Then apply a dressing of well-decayed manure every fall, and fork it in early the next spring.—C. E. P.

552. **Wintering Pansies.** Do not remove the sash, and protect from frost at night by means of straw, mats or shutters. Air freely whenever the opportunity offers. Keep the plants free from weeds by stirring the ground between them occasionally. See that they are properly supplied with water, and after March 1st give liquid manure at least twice a week.—C. E. P.

604. **Shropshire Damson Plum.** Shropshire Damson is equally productive, larger, and better quality than the common Blue Damson. If either do well with you, plant largely. There is no present danger of overstocking the markets with such good canning Plums.—D. B. W.

551. **Manure for Small Fruits.** Stable manure can be supplemented to great advantage with bone dust or wood ashes for strawberries, but for all other small fruits I prefer it alone. No danger of too much if properly applied.—C. E. P.

602. **Coal Tar and Peach Trees.** To prevent injury to the trees from the Peach borer coal tar should be applied directly after the trees bloom. It is rather a heroic and hardly safe preventive at best. For perfect safety from the borer the soil should be taken away, so as to expose at least three inches of the trunk, the tar applied, and then covered with strong light-colored paper, putting the soil back to hold the paper in place. The old plan of banking the soil up around the stem firmly eight to twelve inches directly after blooming, and taking it away the middle of the following August, and destroying all borers visible at that time each year, is safest and best. Many intelligent men are now advocating budding all Peaches on Chickasaw Plum seedlings a foot above ground, claiming that this plan will prevent borers, and yellows, and give more productiveness and hardihood of tree. Peaches may also be budded in the branches of this Plum for farther north.—D. B. WIER.

603. **Plums in Sod.** One could *force* a success in such a case, but it would be laborious and expensive. To succeed, one should spade up a circle six feet across, a spit and a half deep. Make all fine, then plant the tree in the center. Then, two or three weeks after planting, stir up, and fine the surface at least six inches deep. Then in a few days mulch the whole worked surface four or five inches deep with partially-rotted dung, straw or chips. Early the next spring turn this under, and in a few weeks cultivate and mulch again. It would be very much cheaper to plow deeply, mark both ways straight with a double plow, plant, cultivate thoroughly, and keep on cultivating and manuring when needed, so long as your orchard lives.—D. B. WIER.

605. **Lime for Grapes.** As a rule soils have enough lime for the Grape. Where there is plenty already it would do no good, and no harm, unless applied in great excess. Where lime is wanting, or the land has a tendency to sourness or muckiness, it would be of benefit. One peculiar value of applications of lime where the season is short is that it induces early and sound ripening of woody growth.—D. B. WIER.

606. **Quince on Muck.** Quinces should do well on muck, if it is not too wet, and so fine and close in texture as to be impermeable to air and rain water. Where quite moist it would be best to plow in lands the width of the rows, then planting on the ridges. If the muck is of a sourish nature it should have a good coating of hardwood ashes, with an occasional sprinkling of salt after the bushes are established.—D. B. WIER.

607. **Increasing Nut Trees.** We have had good success by cleft grafting the Chestnut quite low in the stock, waxing, and then mounding the soil up to the top bud of the graft, pressing it firmly around it, and have succeeded fairly well by splice-grafting in the branches. When this is done the scion and twig grafted should be very nearly of a size. Side grafting near the surface and mounding up should be good with the Chestnut, for it is best with the Walnut, Hickory, and many other things. Most of the modes of grafting are fairly illustrated in Webster's Unabridged Illustrated Dictionary, except the modern side-grafting. In it we cut a sloping cut downward through bark and wood, then cut the graft wedge-shaped, same as in cleft-grafting. Insert the graft by bending the top of the tree from the cut, then cut it off a half-inch above the top of the cut, leaving a rim of bark all around the top of the stock; then wax and bank up. In this way the fine English Walnut grafts readily on the Black Walnut, and, we have read, the Black Walnut on the Butternut, and we suppose the Pecan on most of the Hickories. In all cases the scions should be in perfect condition.—D. B. WIER.

608. **Gooseberry for Maine.** For ordinary upland Houghton Seedling is the most profitable, it being the hardiest, most thrifty, and very productive. The fruit is small, which is no detriment for home use, but will not probably sell as well as the larger varieties in a large market, although it makes the best preserves. On a deep, mellow, moist soil, the Downing makes a large bush, is equally productive, and a much larger berry. Smith's Improved is very good, but liable to mildew here. The Houghton never has. It is my main crop.—E. W. MERRITT, *Houlton, Me.*

582. **Keeping the Hibiscus Dwarfed.** If the tops were pruned to correspond with the roots cut off by the course you refer to no material injury would accrue to the plants, and they could no doubt be well grown in this dwarfed form. But at best the treatment is somewhat unnatural, and to our notion less satisfactory than to have young fresh plants coming on to take the place of the older ones when the latter become unwieldy. We have seen so much working and fussing to keep up overgrown plants that we have become somewhat tired of it, and do not hesitate to advise instead the course suggested

569. **Monthretia Pottsi not Blooming.** Some people find it difficult to flower this plant. I have no trouble in getting it to bloom if I take care of its leaves and keep them green *i. e.*, if they chose to remain so all winter. Sometimes we lift the bulbs in October with a fork, drop them into large pots, and keep them there in a cool house until spring, when they are planted out in the borders. A way which with me has never failed to induce it to flower is to secure some strong offsets with green leaves upon them and put half a dozen of them in a 6-inch pot, keeping the pots in a greenhouse all the winter, where they will continue to grow slowly. Towards the end of April they should be hardened off, and then planted out in a fairly rich and deep piece of ground. As the leaves are somewhat delicate after being kept under glass all the winter, a few green branches should be stuck in the ground round them when the wind is very cold. After the middle of May they will take no harm from the weather, unless it should be very dry, and then they must have water as often as they want it. Plants treated in this way will flower in July and August.—A. H. E.

568. **Defective Hot-Water Apparatus.** It is undoubtedly the confined air in the pipes which prevents the water from circulating, and if there is no air pipe to allow of its escape you will have to get one fitted. This should be at the end of the flow, just at the bend, and need not be more than 18 inches long. At one time when we were running a greenhouse heated with some warped four-inch hot water pipes we found that the upper bends, however slight, caused trouble in this way. We drilled a small hole at each of the highest points into which we fitted a tapering wooden plug. By removing these plugs for a short time after first starting up fire each autumn we overcame the trouble easily. The fact of the water surging up and down in the supply cistern is a sure sign that the air cannot escape from the pipes. Are you sure that the flow-pipe does not dip, as if it does, however slightly, the water will have great difficulty in forcing its way along it. See that this is at least level it ought to rise a little that the return pipe falls, and fix an air pipe as above indicated, and you will find that circulation will go on all right.

577. **Bouvardias After Flowering.** Like all plants, these do better to be treated for a period of rest after blooming. They require for flowers a warm greenhouse, of a temperature of 45° to 50° as the lowest at night. When they cease flowering keep them rather dry at the root, set them in the coolest part of the house, cut them down pretty close, and let them have a month's rest; then put them into the warmest part of the house, or, if planted out, give them more heat, and water moderately. They will soon push forth abundance of shoots, which, when long enough, may be pinched back. Old plants may be shaken out, and repotted in light, rich soil, and grown on for early flowering. A mixture of turfy loam, leaf-mold, and sand suits Bouvardias, and, if kept free from the attacks of fly by timely fumigation, no plant that we cultivate is more useful or beautiful, either as a pot plant or for supplying cut flowers. After potting, considerable care must be exercised not to overwater; but as growth advances more liberal supplies will be needed. When the pots are fairly filled with roots shift into larger pots.

609. **Peach from Northern China.** The new Peaches from North China and the Steppes of Asia are new in North America. They have passed only two winters as young trees, and are rated about as hardy in wood as our apple trees that are fairly hardy in Northern Illinois. But I think they seem hardier than that here, for they withstood 31 degrees below zero in Northern Illinois last winter, without any more (if as much) discoloration of the wood than the hardy Northern Wild Plums. How hardy the fruit buds are we do not know. They have withstood 20 degrees below zero this winter, where fully half of the buds on common Peach seedlings are killed. We expect to have it in fruit at many points in the Northwest next summer, then we will know something about them. They might succeed at Shawano, Wis., budded into the branches of hardy native Plums.—D. B. WIER.

530. **To Build a Brick Flue** Build an arched fireplace with fire bricks, 2 feet deep, 16 inches high in the center, 11 inches at the sides, and 17 inches wide, fire-bar 2 feet long, leaving a space of 3 inches between end of bars and furnace door; the ash-hole same size as fire-bar, with door to match. The flue carried round on the level of floor of the house must be 6 inches higher than top of fire-bar, with a gradual rise of 6 inches about 6 feet from chimney end, and built 3 bricks deep edgeways, 1 foot wide within, lined with silt mortar, and covered with Yorkshire slabs 2½ inches thick; a chimney 15 feet high to match the flue will give sufficient draught. At the bottom of chimney put in small door, and a damper 5 feet above. The flue must not be built to turn at right angles, but with a curve on the outside. When all is complete, to get it to draw place a double-handful of shavings at bottom of chimney, set on fire, close the door, and when blazing light the fire, leaving the ash-hole door open.—F. A. HARRISON.

610. **Lettuce in the Greenhouse.**—To start rightly in this business it is necessary to arrange the details for soil, etc., during the season before. A light loam, inclining to sand makes a very good soil for forcing Lettuce. It should be well manured by mixing with it ¼ its bulk of well rotted stable manure, the spring before being used. It should be thoroughly mixed by being handled several times and having the benefit of the summer rains. If the sash or glass can be easily removed, this can be done on the greenhouse benches. Provided the old soil in the benches is of the right character and can be "weathered" by removing the glass, it will answer by being treated as directed above. For the locality of Buffalo, it is necessary to sow seed about Aug. 10-15, in order to get good plants for the benches about Sept. 20-25. Advantage should be taken of a rainy spell about that time for planting, as these outdoor plants wilt very easily. If the weather is dry, watering and shading must be resorted too, to prevent wilting and checking the growth. It is better to wait a week or more for a wet spell than to plant without rain. Plants should be set about 6 or 7 inches each way for compact growing sorts. The crop should be kept growing rapidly while the weather is warm so as to be well grown by Dec. 1st, for from Nov. 1st to Feb. 1st is the most difficult season to get growth on Lettuce owing to the lack of sunshine. The pot system of bringing on young Lettuce plants is an excellent one. On the score of transplanting easier it would probably pay to pot the first lot to be planted in, but for all succeeding crops the advantage is great in a number of other respects besides. By the time the first crop is sold in December, there should be sufficient good strong plants in pots to fill the space as quickly as cleaned. These can be had by potting good strong plants about Oct. 15th to 30th from outside. Plant about 7 to 8 inches apart this time as, on account of cloudy weather, more room is needed than for the earliest. About Oct. 1st a good supply of seed should be sown in boxes for refilling pots in December, as soon as they are emptied. After this, throughout the winter a lot of seed for the second succeeding crop, should be sown about the time of removing each crop. Before the planting of each new crop, the soil should have a dressing of very fine rotted manure, or some good fertilizer, and be well spaded and worked. For fall management the sash should be left entirely off from the houses until there is danger of frosts, for on no account should the Lettuce freeze, as it will check growth for several weeks. A temperature of about 40° to 50° at night and from 50° to 70° in day time, according to the amount of sunshine, should give good results; ventilation on all days that the outside air is above freezing and a little air should be given once a week at least, unless weather is extremely cold. Towards spring when the sun is higher the temperature can safely run up to 80° or 85° in day time and need not be much below 60° at night, if considerable ventilation can be given. Water only when the soil becomes dry, which will be very seldom from Nov. 1st to Feb. 1st. During March, April and May, a crop can be cut in from three to six weeks from time of planting into beds from the pots, if everything is well done. From May 1st to 15th the benches can be sown to Cabbage and Cauliflower seeds, which will do very well if sash are removed as soon as the plants begin to crowd (this plan, it may be remarked, overcomes the greatest obstacle to raising Cabbage and Cauliflower plants, namely the flea. The root maggot also does very little mischief compared with sowings made in the open ground, as the sash can be kept on till within a week or two of time when plants are ready to transplant, and thus shut out the fleas and maggot-fly up to that time). Tomato Pepper, Egg-plant, etc., can also be raised after the Lettuce, but should be sown two or four weeks earlier than Cabbage. When setting out the plants from the pots, they should be graded to uniform sizes, or rather, as soon as ten feet or more of bed is cleaned, pick out the largest plants in pots for planting, which will give the remaining ones more room; be careful to have all plants of uniform size when planted in bed, so that when one is ready to cut, they all are, and the bed can be cleared and replanted the same day. This is very important towards spring as each day is valuable, for on a sunny day when the temperature can be kept from 75° to 80°, the Lettuce will make more growth than in a week in December. After Jan. 15th the new stands of Lettuce can again be set closer, say to 6 or 7 inches, if of the compact sorts. There are a number of varieties used for forcing. Each market seems to favor some one sort above others; for Buffalo market nine-tenths of the winter lettuce is Hubbard Market, which seems better adapted for forcing at the different seasons and also for outdoor growing than any other variety we have tried. This variety seems not to be generally known outside of this vicinity. The price received for Lettuce usually runs from 40 cents to 75 cents per dozen in the Buffalo market, according to season and quality. It averages, perhaps, 55 cents, at which price it is a good paying business, especially if the pot system is handled rightly. Near cities which employ illuminating gas, the coke makes an excellent cheap fuel.—D. N. LONG, *Williamsville, N. Y.*

561. **Material for Protection.** If the land is poor perhaps manure, if quite coarse and strawy, would be best, if not put on so thickly as to heat and injure the canes. If the plants need manure this would be an economical way to supply it; if they do not, covering with soil would be much the cheapest and is always a perfect one if not left on too late in the spring. It need not, nor should it be thick, just enough to cover them out of sight. Except in very severe climates where the snow is liable to blow away simply laying Grape-vines flat on the ground with anything on them, such as the stakes they are tied to, or a few lumps of soil, is sufficient protection for them.—D. B. W.

PLUMBAGO CAPENSIS.

Some Good Plants for Garden and Pot Culture.—The Plumbagos.

The subjects of our sketch, even though long-known, have merit in a degree to render them worthy of more general attention than they usually receive. The more valuable sorts are as follows, beginning with one that is probably the finest of the genus:

Plumbago capensis, of which we present a spirited engraving, is a native of Africa on the Cape of Good Hope, and is a plant that certainly well deserves a high degree of praise. It is easy of management both as a pot plant and for bedding. Its habit of blooming is free and long continuous, and in its flowers we have one of the rarest and most delicate colors in cultivation, namely, a beautiful lavender-blue. While it is true that the individual flowers last but a day, yet others on the same head for a long time continue to open, so that each head is apparently a mass of bloom on the current year's growth. Were it not that the flowers lack fragrance they might be called almost ideal blooms. When this species is well grown a shrubby bush some thirty inches high is formed, the appearance of which when in bloom is not easily surpassed.

The treatment of P. capensis is simple: Propagated from cuttings, or, better, by offsets from old plants rooted in bottom heat, small plants can be planted in full sunshine outside, in a soil not too rich, after danger of frost is past. Until cold weather it may be expected to flower with considerable freedom, and then if the plants be lifted, cutting back their shoots say two thirds, and potting in light, moderately rich soil and placed in a sunny situation, with fair warmth, they will give many flowers during the winter. Where this is done, however, it is better each year to start new plants, as these are on the whole more satisfactory. Required for summer flowering only, they may be stored during the winter in a cellar or cool greenhouse, having the roots covered with soil to prevent drying and planting out in spring after cutting back a third or less of the old wood.

In greenhouse culture good effects may be produced with this species by training the plants as climbers. With a little care, if placed in various degrees of heat, bloom may be had steadily the year round.

Plumbago rosea, an East Indian species, requiring more heat than the above, is an old sort, valuable for decoration from its free blooming habit and graceful appearance.

Cuttings are struck in the spring and grown in good light soil, having a cool airy place during the summer in small pots, pinching several times and not allowing them to become dry. As cold weather sets in they should be brought into heat, and then bright masses of pinkish-salmon flowers will soon follow, continuing to appear throughout the winter. Where old plants are desired, simply keep the stock well cut back to induce young growth, and for several months water can be partially withheld as a sort of rest, then repot and start in heat.

Old flower stems, if left undisturbed on the plants, will have a second crop early in the spring, not as fine as the first, however. Weak manure water occasionally is of use.

P. rosea coccinea is a variety of the last both larger and brighter than the parent, and excellent for winter decoration. The plant is of free branching habit, producing panicles of blooms of a deep red color, and nearly two feet in length sometimes, during the whole winter.

P. Larpentæ, introduced from Shanghai, by Lady Larpent, is a dwarf, hardy herbaceous kind, freely producing flowers of deep blue, changing to violet. It grows from six to twelve inches high and is useful for rock work and sunny borders, as well as for edging beds and walks, being attractive and requiring but little attention. The most ordinary soil will answer its needs. In the colder sections a light mulch at the approach of winter is beneficial. It is propagated by cuttings, or by dividing the roots early in the spring before growth commences, or by seed sown when ripened. Aside from its intense and not common color, this sort ought to be welcomed because of its blooming late in the summer, and when most hardy plants are out of flower.

THE COMPLETE GARDEN.*

XIII.

BY A WELL-KNOWN HORTICULTURIST.

SELECTIONS OF HARDY ORNAMENTAL WOODY GROWTHS.

Continued from page 87.

Class 1.—*Comprising kinds suited to general planting, and such as are not embraced in the additional classes below.*

TREES.

(Note:—For a key to the letters following the names, see page 87, January issue. Var. preceding any name below indicates a variety of last species preceding.)

ASH. American White, (*Fraxinus Americana*) A.
Bosc's, (*var. Boscii*) B.
European, (*F. excelsa*) B.
Single-leaved, *var. monophylla*) B.
ASPEN. American, or Trembling, (*Populus tremuloides*) B.
BEECH. European, (*Fagus sylvatica*) A.
American, (*F. ferruginea*) B.
BIRCH. European White Weeping, (*Betula alba*) B.
Cut-leaved Weeping, (*var. pendula elegans*) B.
BUCKEYE. Red, (*Æsculus Pavia rubra*) G.
Long-racemed, (*Æ Pavia flora*) C-D.
CERCIDIPHYLLUM JAPONICUM B.
CHESTNUT. American, (*Castanea Americana*) A.
ELM. American White or Weeping, (*Ulmus Americana*) A.
English, (*U. campestris*) A.
Cork-barked English, (*var suberosa*) B.
Common Scotch or Wych, (*U. montana*) B.
Huntingdon's, (*var. Huntingloni*) A.
Blandford's, (*var. superba*) A.
Red or Slippery, *U. fulva*) B.
HICKORY. Common, (*Carya alba*) A.
HOP TREE. Shrubby Trefoil, (*Ptelia trifoliata*)F.
HORNBEAM. American, (*Carpinus Americana*)C.
HORSE CHESTNUT. European or Common, (*Æsculus hippocastanum*) A.
Double White-flowered, (*var. alba fl. pl.*) B.
Dwarf, (*var. nana Van Houttei*) F.
Red-flowering, (*Æ. rubicunda*) B.
LARCH. European, (*Larix Europea*) A.
LINDEN. European, (*Tilia Europea*) A.
European White-leaved, (*var. alba*) B.
White-leaved Weeping, (*var. alba pendula*) B.
LIQUIDAMBAR, OR SWEET GUM. (*Liquidambar styraciflua*) B.
MAPLE. Sugar. (*Acer saccharinum*) A.
Norway, (*A. platanoides*) A.
Silver-leaved, (*A. dasycarpum*) C.
European Sycamore, (*A. pseudo platanus*)A.
English, or Cork-barked, (*A. campestris*) E.
Tartarian, (*A. Tartaricum*) F.
Ash-leaved or Box Elder, (*Negundo aceroides*) E.
MOUNTAIN ASH. European, (*Pyrus Aucuparia*)C
Oak-leaved, (*P. quercifolia*) B.
MULBERRY. Red, (*Morus rubra*) B.
OAK. Scarlet, (*Quercus coccinea*) A.
White, (*Q. alba*) A.
Burr, or Mossy Cup, (*Q. macrocarpa*) B.
Laurel or Shingle, (*Q. imbricaria*) B.
Red, (*Q. rubra*) A.
Chestnut, (*Q. prinus*) A.
English Royal, (*Q. robur*) A.
Turkey, (*Q. Cerris*) A.
OSAGE ORANGE. (*Maclura aurantiaca*) B.
POPLAR. White, Silver, or Abele, (*Populus alba*) A.
SASSAFRAS. (*Sassafras officinale*) B.
TULIP TREE. (*Liriodendron tulipifera*) A.
WALNUT. Black, (*Juglans nigra*) A.
WILLOW. Laurel-leaved, (*Salix laurifolia*) C.
Shining-leaved, (*S. lucida*) C.

SHRUBS.

ANDROMEDA. In sorts.
CALYCANTHUS. Common, (*Calycanthus floridus*)G.
CARAGANA ARBORESCENT, F.
COTONEASTERS. G-H.
ENONYMUS. Broad-leaved, (*Enonymus latifolius*) G-F.
Strawberry Bush, or Spindle Tree, (*E. Americanus*) F.
European Burning Bush, or Spindle Tree, (*E. Europæus*) G.
Burning Bush or Spindle Tree, (*E. atropurpurea*) G.
FORSYTHIA in variety G.
HONEYSUCKLE in variety.
JAPAN QUINCE. Scarlet in variety, (*Pyrus*) G.
LILAC. In variety, (*Syringa*) E.
Josika's, or Chionanthus-leaved, (*S. Josikæa*) F.
MOCK ORANGE, OR SYRINGA, in variety, (*Philadelphus*) H-F.
Dwarf, (*var. nana*) H.
Dwarf, Double-flowering, (*P. dianthiflorus flore pleno*) H.
Large flowered, (*P. grandiflorus*) G.
PLUM. Tomentose, (*Prunus tomentosa*) G.
PRIVET. Common, (*Ligustrum vulgaris*) F.
Oval-leaved, (*L. ovalifolium*) F.
Laurel-leaved, (*L. laurifolium*) F.
VIBURNUM in variety.
WEIGELIA in variety, (*Diervilla*) H-F.
WINTER BERRY, or Black Alder, (*I. verticillata*) F.

LIQUIDAMBAR OR SWEET GUM.

Class 2.—*Kinds conspicuous for large or bold forms of foliage.*

TREES.

AILANTHUS GLANDULOSUS B.
CATALPA. Common, or Indian Bean, (*Catalpa bignonoides*) A.
Hardy, (*C. speciosa*) A.
ELM. Broad-leaved, (*Ulmus montana latifolia*) B.
HONEY LOCUST, or Three Thorned Acacia, (*Gleditschia tricanthos*) B.
KENTUCKY COFFEE TREE, (*Gymnocladus Canadensia*) B.
LINDEN. American or Basswood, (*Tilia Americana*) A.
Broad-leaved, (*Tilia Europea platyphylla*) B.
MAGNOLIA. Cucumber Tree, (*Magnolia acuminata*) A.
Heart-leaved, (*M. cordata*) F.
Umbrella, (*M. umbrella*) D.
Great-leaved, (*M. macrophylla*) C.
Ear-leaved, (*M. Fraseri*) B.
Long-leaved Sweet Bay, (*M. glauca longifolia*) F.
MAPLE. Large-leaved, (*Acer macrophyllum*) A-J.
OAK. Burr or Mossy Cup, (*Quercus macrocarpa*)A.
Large-leaved, (*Q. robur macrophylla*) B.
Chestnut, (*Quercus prinus*) A.
PAULOWNIA IMPERIALIS B.
ARALIA. Japan, (*Aralia Japonica*) F.
Angelica Tree or Hercules Club, (*A. spinosa*) F.
LILAC. Giant. (*Syringa vulgaris gigantea*) F.

Class 3.—*Kinds that are characterized by cut, curled, narrow or small leaves.*

TREES.

ALDER. Imperial cut-leaved, (*Alnus glutinosa lacinata imperalis*) B.
ASH. Willow-leaved, (*Fraxinus excelsa salicifolia*) D.
BEECH. Cut-leaved, (*Fagus sylvatica lacinata*) B.
Fern-leaved, (*var. asplenifolia*) B.
BIRCH. Poplar-leaved, (*B. alba populifolia*) B.
DECIDUOUS CYPRESS. Common or Swamp, (*Taxodium distichum*) A-J.
ELM. Berard's, *Ulmus campestris Berardi*) B.
Webb's, (*var. crispa*) B.
Twiggy English, (*var. viminalis*) C.
Curled-leaved, (*var. euculata*) B.
Nettle-leaved, (*var. u'rica folia*) A.
LINDEN. Grape-leaved, (*Tilia Europea vitifolia*) B.
LOCUST. Golden, (*Robinia pseudacacia aurea*) B.
Gummy Acacia, (*R. viscosa*) B.
MAIDEN HAIR, OR GINKGO. (*Ginkgo adiantifolia*) A.
MAPLE. Cut-leaved, (*Acer platanoides dissectum*) A.
Eagle's Claw, (*var. laciniatum*) A.
New Cut-leaved Silver, (*A. dasycarpum heterophyllum laciniatum*) C.
Wagner's Cut-leaved Silver, (*var. Wagneri laciniatum*) C.
Crisp-leaved Silver, (*var. crispum novum*) C.
OAK. Willow-leaved, (*Quercus phellos*) B.
Cut-leaved, (*Q. robur laciniata*) B
Latifolia cucullata, (*Var. latifolia cucullata*)B.
SOPHORA. Common, (*Sophora Japonica*) B.
SUMACH. Cut-leaved, (*Rhus glabra laciniata*) E.
WALNUT. Black, (*Juglans nigra*) A.
WILLOW. Rosemary-leaved, (*Salix rosmarinifolia*) D.
Ring-leaved, (*S. Babylonica annularis*) D.

SHRUBS.

AMORPHA. Shrubby, (*Amorpha fruticosa*) G.
BLADDER NUT. American, (*Staphylea trifolia*)F.
Pinnate-leaved, (*S. colchica pinnata*) F.
ELDER. Cut-leaved, (*Sambucus nigra laciniata*) G.
HAZEL OR FILBERT. Cut-leaved, (*Corylus avellana laciniata*) G.
LILAC. Cut-leaved Persian, (*Syringa Persica laciniata*) F.
SPIRÆA. Germander-leaved, (*Spiræa chamædrifolia*) H.
Mountain Ash-leaved, (*S sorbifolia*) F.
TAMARISK. African, (*Tamarix Africans*) F.

Class 4.—*Kinds with variegated, mottled, whitish, or golden-hued leaves or bark.*

TREES.

ASH. Aucuba-leaved, (*Fraxinus Americana aucubaefolia*) C.
Variegated-leaved, (*F. excelsa concavaefolia variegata*) B.
BEECH. Golden-variegated, (*Fagus sylvatica aurea variegata*) B.
BIRD CHERRY. Aucuba-leaved, (*Prunus padus aucubaefolia*) C.
CATALPA. Golden, (*Catalpa bignonioides aurea*)A.
ELM. Variegated-leaved, (*Ulmus campestris variegata argentea*) B.
Golden-leaved, (*var. aurea*) A.
MAPLE. Golden-leaved Sycamore, (*Acer pseudo platanus aurea variegata*) B.
Variegated Ash-leaved, (*Negundo foliis argenteis variegatis*) E.
OAK. Golden-leaved, (*Quercus robur concordia*) C.
Silver-leaved, (*var. argentea variegata*) B.
POPLAR. White or Silver or Abele, (*Populus alba*) A.
WILLOW. Three-colored, (*Salix caprea tricolor*)D.
Rosemary-leaved, (*S. rosmarinifolia*) D.
Royal, (*S. regalis*) D.

SHRUBS.

ALTHEA. Variegated-leaved, (*Hibiscus flore pleno foliis variegata*) E.
CORCHORUS. Silver variegated-leaved, (*Kerria Jap. foliis variegata*) H.
DEUTZIA. Variegated, (*Deutzia gracilis variegata*) H.
DOGWOOD. Variegated-leaved, (*Cornus variegata*) G.
Variegated Cornelian Cherry, (*C. mascula variegata*) E.
ELDER. Golden-leaved, (*Sambucus nigra aurea*) F
Variegated-leaved, (*var. variegata*) G.
LILAC. Golden-leaved, (*Syringa vulgaris foliis aurea*) F.
MOCK ORANGE. Golden-leaved, (*Philadelphus foliis aurea*) H.
OLEASTER, OR WILD OLIVE. Silver-leaved, (*Elaeagnus argentea*) F.
SPIRÆA. Golden, (*Spiræa (Neillia) aurea*) F.
WAXBERRY. Variegated-leaved, (*Symphoricarpus vulgaris foliis variegata*) H.
WEIGELIA. Dwarf, Variegated-leaved, (*Diervilla nana foliis variegata*) H.
ARBOR VITÆ. Geo. Peabody's, (*Thuja occidentalis aureum*) H.
Borrow's, (*var. Burrowii*) H.
Parson's, (*var compacta*) H.
Hovey's, (*var. Hoveyii*) H.

Class 5.—*Kinds with purplish or blood-colored leaves or bark.*

TREES.

BEECH. Large Purple-leaved, (*Fagus sylvatica purpurea major*) C.
Rivers Purple-leaved, (*var. purpurea Riversii*) B.
Copper colored, (*var. cuprea*) B.
BIRCH. Purple-leaved, (*Betula foliis purpurea*) B.
ELM. Purple-leaved English, (*Ulmus campestris purpurea*) A.
PEACH. Purple or Blood-leaved, (*Persica vulgaris foliis purpurea*) C.
MAPLE. Purple-leaved Sycamore, (*Acer pseudo platanus purpurea*) B.

Japanese, (*A. polymorphum*) D-J.
Blood-red-leaved Japanese, (*var. sanguineum*) D-J.
Dark Purple leaved Japanese, (*var. atropurpureum*) D-J.
Various-colored Japanese, (*var. versicolor*) D-J.
Cut-leaved Purple Japanese, (*var. dissectum*) D-J.
OAK. Purple-leaved, (*Quercus robur atropurpurea*) B.
PLUM. Purple-leaved, (*Prunus Pissardi*).

SHRUBS.

BERBERRY. Purple-leaved, (*Berberris vulgaris purpurea*) H.
ENONYMUS. Purple-leaved, (*Enonymus Europaeus atropurpureus*) G.
HAZEL, OR FILBERT. Purple-leaved, (*Corylus avellana purpurea*) G.

Class 6.—*Kinds of Pendant or Weeping habit.*

TREES.

ASH. Weeping European, (*Fraxinus excelsa pendula*) C.
BEECH. Weeping, (*Fagus sylvatica pendula*) B.
BIRCH. Young's Weeping, (*Betula alba pendula Youngii*) D.
BUCKEYE. Dwarf Pendulous, (*Æsculus pavia pumila pendula*) C-D.
CHERRY. Dwarf Weeping, (*Prunus avium pumila pendula*) C-D.
ELM. Weeping Small-leaved, (*Ulmus campestris microphylla pendula*) C.
Weeping Cork-barked, (*var. suberosa pendula*) B.
Weeping Camperdown, (*U. montana Camperdowni*) B.
Weeping Scotch, (*var. pendula*) B.
Rough-leaved Weeping, (*var. pendula rugosa*) B.
HONEY LOCUST. Weeping (*Gleditschia Bujotii*) B-J.
LARCH. Weeping European, (*Larix Europæa pendula*) A.
MOUNTAIN ASH. Weeping, (*Pyrus aucuparia pendula*) D.
OAK. Weeping, (*Quercus robur pendula*) B.
POPLAR. Weeping tooth-leaved, (*Populus grandidentata pendula*) D.
Athenian Weeping, (*P Graeca pendula*) B.
SOPHORA, Weeping, (*Sophora Japonica pendula*) B-D.
WILLOW. Babylonian or Weeping, (*Salix Babylonica*) C.
Kilmarnock Weeping, (*S. Caprea pendula*) C.
American Weeping, or Fountain, (*S. purpurea pendula*) D.

SHRUBS.

BERBERRY. European or Common, (*Berberis vulgaris*) G.
DOGWOOD. Weeping, (*Cornus florida pendula*)C.
FORSYTHIA. Weeping, (*Forsythia suspensa*) E.

(*To be continued next month.*)

A Choice Basket Plant: Russelia Juncea.

WILBUR F. LAKE, ERIE CO., N. Y.

It is to be regretted that this plant, possessing as it does the most desirable features for basket or vase culture, is not more widely cultivated. The price for a nice thrifty plant is not high, neither can its newness account for its scarcity, for its introduction dates back to 1812. The writer is led to believe that in the general craze for the more showy flowers, this, like many others of delicate beauty, has been passed unheeded by.

The Russelia is a twiggy, rush-like plant of slender habit, with greenish branches which spring apparently from the base, having small, smooth, opposite ovate leaves, and a great profusion of trumpet-shaped bright scarlet flowers. The latter which are about an inch long, are produced from the axils of the leaves upon somewhat angular stalks, so as to form loose panicles at the end of the branches.

To see this plant in all its natural beauty and perfection of grace, it should occupy the side of a vase, or be suspended from a basket. So treated, the branches are enabled to droop and bloom right along.

The coloring of the conspicuous flowers, too, being a bright fiery scarlet, is scarce among basket plants, thus giving an additional point of value for this purpose.

As to general requirements, these are simple, when given an average temperature of not lower than 55 degrees. Although needing an abundance of root room, with this, as with most other plants, it is a serious fault to over-pot. For compost, use one part well-decomposed cow manure, two parts well-decayed sandy sods, some rotten hop refuse, and a liberal sprinkling of bone dust. Of course, insect pests must be expected unless prevented. For this fsequent syringings are of great benefit, as this not only prevents their attacks, but tends towards active growth in consequence of keeping them clean. To propagate it place cuttings of half-ripened wood in sand in gentle heat where they will soon strike root.

THE WEEPING SOPHORA.

The Russelia belongs to the natural order Schophulariaceæ, the generic name being given in honor of Dr. Alexander Russel, a celebrated English physician; and the specific name with reference to the rush-like branches of the plant.

Strawberries for Best Profits.

M. T. THOMPSON, EAST ROCKPORT, OHIO.

As to what should be planted, I would say it depends a great deal on both the soil and the market you have. In some markets small berries fetch almost as much as large ones, in which case plant the small prolific kinds like Capt. Jack, Crescent, Wilson, May King, and others, choosing the most productive on your soil.

I find Capt Jack to be very productive, of good color and it increases well. Crescent is very productive, beautiful, and sells well, but the trouble is it gets matted very thick and with dry weather at picking time half the berries do not mature. With it one should get a good stand of plants and if growing too thrifty cut off some of the runners. This applies to most all kinds.

The importance of getting a full crop of berries not only lies in its being easier to get them picked, but also in its being easier to sell them. Most people like a large berry, but many who work for small wages cannot afford to pay big prices for such, so we must raise something that can be sold cheap or we lessen the consumption, which should not be done. The children of the poor should eat Strawberries as well as the rich. The poor class of people do the hardest work and they should have an abundance of such healthful luxuries. I don't agree with one gentleman who once said in my presence that it was not necessary for workingmen to buy the best of flour. I happen to know that this "gentleman" never did one hard day's work in his life.

For a large Strawberry I find the Mount Vernon to be the most profitable of any of the old kinds; next comes the good old Sharpless. It is large, and if not of quite as good a shape as I would like, the shape don't hurt the taste. Of this I raised many the past season that would lay on the open top of a tea cup and not fall in. If not allowed to grow to thick in the row and on good, heavy ground, this variety with me averages the largest of any grown. One objection to them can be raised, they do not ripen as even as I would like. With me they do better the second year than the first, sometimes double or more, as a result of cleaning them all out after I get through picking the first year. Sometimes I have went over them three times pulling off all the runners before they struck root. But for this I would not have had so many bushels of berries, nor got as much per bushel for them.

As regards price I generally get twice as much for Sharpless as I do for Wilson, while they are larger, hence cheaper to pick. With only half the crop of the former I make more money. Our market (Cleveland) is no doubt different from some others, for large, good looking berries like Sharpless, Mount Vernon, Great American, Jucunda, etc., bring from a certain class of rich people 12 to 15 cents per quart when Wilson and the smaller berries sell for 5 cents. Let me not be understood as claiming that these large sorts are the most productive; what I do claim is that they pay me the best. The Manchester is very productive, but with me rusts badly. The great merit of the Mount Vernon is, it comes in about ten days later than Sharpless and as most others are getting poorer, so it generally sells well.

While the berries named do so well with me it is not likely they do as well everywhere. Some are sectional no doubt. What I would urge growers to do is to try a few of each kind until you find which do the best in your soil and location. It is not, of course, best to invest in any new kind heavy at first; sometimes you might hit it, but most times you will miss it. I recall once putting in 10,000 of a new kind because they done, and sold well with a friend of mine, as they do to this day, he raising no others; but with me they were a complete failure. In my patch I also planted a row of another new variety from another friend. This man had not fruited it at that time. The following spring I had lots of nice plants, so asking him of his later experience he said they were "no good." Taking his word I did not set a plant of it that spring, only to regret it at picking time, for here in my grounds the same variety made one of the prettiest, best loaded rows of berries I ever saw, and they keep up doing as well. My friend, learning how well they did, tried another row of the same, and this time they succeeded remarkably well. The whole trouble at first had been that he let the plants get so thick the berries could not properly develop.

Both these friends were honest in their opinions, but in one case my soil was not adapted to the kind while the other was; in the other case my friend did not give his berries a chance to develop. This same thing is occurring everywhere, not only in

Strawberries but in all kinds of fruits and vegetables. Whatever is raised let us give more care, better attention, and in Strawberries mulch them with fine straw or fine manure early in winter or fall.

If it is impossible to mulch in the fall then let it be done in the spring, as it will no doubt pay well. You take to market 20 bushels of Strawberries, no matter how large they are, but all dirty and poor looking, and let your neighbor take in a similar load of clean and bright fruit, and see the difference in price. In Cleveland the latter would find quick sale at double the price. Suppose the price for the dirty lot is $2.00 per bushel and of the clean $4.00, here on the load of 20 bushels there would be a net difference of just $40.00. This is supposing a case that is often borne out by actual facts.

Nitrate or Ammonia.

BY N. Y. L.

In the January POPULAR GARDENING, A. C., Martinsburg, W. Va., asks about nitrate of soda, kainit, and sulphate of ammonia in the garden. I think the matter will warrant a fuller reply than Mr. Harris' excellent short reply in the same number.

In using nitrates, it must be kept in mind that they (with the exception of the nitrates of alumina and of iron, which are never in quantities so large as to make them of account) are readily leached out of the soil. Hence nitrates should be applied only when there is a crop or will immediately be a crop, to use them. Otherwise it is generally cheaper to apply nitrate forming manures. Don't you think it would often be more economical, Mr. Harris, to make at least two applications of those 500 pounds per acre?

Not so very long ago we were taught that ammonia compounds were the sole source from which plants could derive nitrogen; but now it is laid down as a general rule that nitrates are better than ammonium compounds. To this there are exceptions, and both rule and exceptions are of importance to gardeners.

Julius Lehmann made his important experiments on Indian Corn; undoubtedly the results would apply to Sweet Corn as well. He proved very emphatically that during the first stages of growth the ammonium compounds were much the best for Corn: the plants given ammonium compounds being vigorous, while those given nitrates were sickly. But after the plants were about six weeks old, the ones given nitrates made a vigorous growth, while those given ammonium compounds made a poor growth. However, Prof. Johnson has demonstrated that Corn plants may be supported on ammonia throughout.

Lehmann's Tobacco plants given ammonia did much better than those given nitrates. Those given nitrates made a slow growth until they approach maturity.

Of Lupines, those given nitrates made the heaviest growth of foliage; those given ammonia the heaviest product of seeds.

Echenbrecher found that Peas used little nitrates, and could not bear an excess of them in the soil. And Hosans found that Peas did even better with nitrates than with ammonium compounds. All the plants were grown in peat charged with ferric phosphate; some had sulphate of potash, sulphate of magnesia, and chloride of ammonium; others had the nitrates of lime and of potash, and sulphate of magnesia, and yet others had all; none did well.

Wein found that Peas and Beans, in pure humus and ash ingredients, were benefited by nitrate of soda, while sulphate of ammonia hindered their early growth and actually killed some. It is supposed that the plants that grew with sulphate of ammonia, were favored by its conversion in the soil to nitrates.

In farm experiments in Germany, with Sugar Beets, a certain weight of nitrate of soda applied in the spring increased the crop from 60 to 75 per cent more than the same weight of sulphate of ammonia; but when they were applied in the fall, the sulphate gave almost as good results as the nitrate. Clearly a good part of the nitrate was leached from the soil during the winter, while a part of the sulphate was converted into nitrates.

Hosans experimented on Onions with ammonium compounds and nitrates. The plants given nitrates did much the better.

Wagner concluded from field experiments that ammonia salts applied to Potatoes did more harm than good. The conditions were such that the ammonia could not readily change to nitrates.

In field experiments with Potatoes, Maercker found no great difference between nitrate of soda, sulphate of ammonia, and Peruvian Guano, when used by themselves or with plain super-phosphates. Light dressings of the nitrate gave comparatively larger returns than heavy dressings. No good resulted from nitrogenous fertilizers of organic origin applied to Potatoes in the spring, either by themselves or with superphosphate; and no good resulted from the use of super-phosphate alone. But good resulted from the use of super-phosphate and an active nitrogenous fertilizer together. Maercker also found that nitrate of soda was a useful addition to farm yard manure, (and that sulphate of ammonia was not), as an application to Potatoes; and that the application should be made at or shortly after the time of planting. Dreschler, in very elaborate farm experiments with Potatoes, found that nitrate of soda with superphosphates gave good results.

Deherain found that large dressings of sulphate of ammonia to Beets were inferior to nitrate of soda; in fact, a positive hurt.

It is a pity that we have not information upon the relative benefit of nitrates and ammonium compounds to the gardener. But the upshot of the affair is, that he should use the ammonium compounds only experimentally until he has determined to what crops they are best applied, when best applied, and whether alone or not. The same is true of the use of nitrates, though not in near so great degree. Gardeners annually spend many thousands of dollars for fertilizers that bring no adequate return; and many, by such experience, are induced to give up the use of fertilizers that properly used would be highly profitable. Here is a field for our private and public experimenters even more worthy than the testing of new varieties.

Carnations for Cut Flowers. In Reply to Inquiry No. 538.

CHAS. E. PARNELL, QUEENS, N. Y.

Cuttings should be put in about the first of February, and when rooted pricked out into shallow flats, and placed in rows an inch and a half apart each way. Then they should be grown on in a cool house until about the tenth of May, when they can be planted out in rows 30 inches apart, the plants being a foot apart in the row. They will require to be cut back once before they are planted outside.

Carnation plants should be given a deep, rich, loamy soil, and this during the summer season should be well and deeply cultivated. This treatment should be kept up until the middle of September, when the plants should be carefully lifted and planted out in the greenhouse benches one foot apart each way. At intervals during the summer the plants should be headed back to obtain bushy specimens with from twelve to fifteen vigorous shoots, but this cutting back should be discontinued after the first of August. After this all their wants will consist in keeping them neatly tied to stakes and giving a temperature of from 45 to 55.

In winter culture air should be frequently given whenever the opportunity offers, and water as required, avoiding extremes of drought and moisture. Fumigate slightly twice a week and syringe gently at times in bright, sunny weather.

The most suitable compost in which to grow Carnation plants is one composed of two parts turf from an old pasture and one part good stable manure. This should be collected early in the spring and mixed so that it will become well rotted when wanted for use. The beds or benches should be well drained and filled with this compost to the depth of about six inches.

Early Cabbage for Profit.

Among the many good addresses delivered at a recent Horticultural Institute in Canada, one of particular value was the impromptu address on the above subject by Mr. Barton, of Weston, a gentleman who almost monopolizes the trade in Toronto for extra early Cabbage. The following is the substance of the speech:

One of the first necessities is suitable soil. No use trying to grow them on sandy soil, no matter how rich. The soil required is black loam, well underdrained, so that stagnant water will not remain. Use plenty of barn-yard manure; as to the quantity, well, put on all you can, and then add a little more. I can never get all that I want for my land. Use abundance of ashes. Never leave the manure in heaps about the field, as it is under these places that the insects lay their eggs, or remain in their pupa state till they are hatched, when they begin to be troublesome. So much for soil.

I sow under glass in boxes, having good drainage. First Henderson's Premier, next Early Jersey Wakefield, and then Henderson's Summer Cabbage. The first lot are sown early in February; a few days elapse between the sowings. The earth is well watered, the seed put on, and covered lightly with dry soil. In four or five days the plants will begin to show. Keep them dry, and in a couple of weeks they will be ready to transplant into boxes, which hold 150 plants; they are yet in the seed leaf. In three weeks change into boxes of the same size, but putting only fifty plants in each box. After another couple of weeks they will be strong and in the rough leaf. Keep them still dry. There is more danger from damping off than from dryness. The boxes are now removed to the frames to harden the plants. Keep covered at night at first, till gradually accustomed to cold. When the plants have lost that bright green appearance, similar to Paris Green, and their stems have become bronzed, if there are no signs of frost, leave off the covers at night. I like a couple of strong windy days and a cold night or two for hardening.

The last week in April, or first week in May, set out in the field. The plants will be able to stand a lot of freezing now without taking hurt. About the second or third week in June, they will begin to flag, and little insects attack them. Now then water, water, I say. What, carry water for 20,000 plants? we have no well, or creek! I hear some of my hearers say. Well, my friends, did you ever notice that upon the hottest days, if you take a glass to the pump to get a drink of cold water, the outside of the glass will be covered with moisture, like dew. I want you to water your Cabbage on a plan something similar to that. When the atmosphere is apparently the dryest, it is then charged with most moisture; and by cultivating the soil, continually keeping it stirred, you attract that dampness, and the plants and soil around them drink in that moisture. The earth is also by capil-

lary action continually drawing moisture from the water level, which is taken off into the atmosphere. By cultivating the soil, it breaks off these tubes, and the earth retains the moisture, so you water your plants above and below, by cultivating the soil.

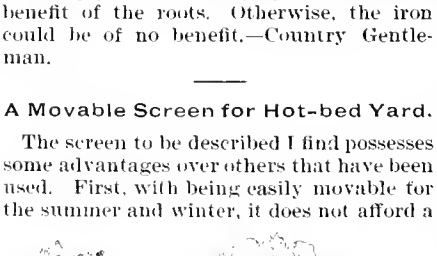
After the crop is harvested, have the stalks pulled and removed. They can be put on the manure heap for Tomatoes, but must not be mixed with manure intended for Cabbages. Don't plant Cabbage on the same ground two years in succession, as the butterflies will lay their eggs in the fences and surroundings, and the young will hatch out early, and be ready for their prey. I don't use artificial manures in outside cultivation, as they are too expensive, but sometimes use a little indoors.

Iron for Fruit Trees.

An exchange furnishes an account of the successful experiment of one of its correspondents who buried old iron about the roots of his trees, which resulted in a great improvement in their growth, and in a greatly increased crop of fruit. This reminds us of an experiment with similar result, many years ago when the theory was extensively advocated that electricity aided vegetable growth, and the Grapevine planted at the foot of the recently erected lightning rod made twice the growth of the vines remote from it; and the rows of Beans planted over the buried wire with upward points at the ends, grew more vigorously than Beans elsewhere. It was found that the increased growth of the vine was entirely the result of the deep bed of mellow earth made in setting the foot of the rod deep into the soil, and the Beans enjoyed the benefit of a similar treatment by the mellow trench for the wire. The pieces of old iron, refuse stovepipes, worn horse shoes, cast off iron kettles, etc., could not be buried under the trees without digging the soil deeply and thoroughly, to the great benefit of the roots. Otherwise, the iron could be of no benefit.—Country Gentleman.

A Movable Screen for Hot-bed Yard.

The screen to be described I find possesses some advantages over others that have been used. First, with being easily movable for the summer and winter, it does not afford a



MOVABLE SCREEN FOR HOT-BED YARD.

harboring place for either vermin or weeds, a matter of some consequence.

Next, with proper care of the material it will last longer than an ordinary one. During the summer it is taken entirely away and the yard can be cleaned up and made quite presentable in appearance.

I set long posts eight feet apart inside measure, and to project six feet above ground. The sides that face each other are dressed off square and two strips one inch apart are fastened perpendicularly on each side, reaching from the ground to the top of the post, forming a groove on each post in which the boards are securely held. One of the four strips facing each other is left six inches the shorter, for the removal of the boards, for which six inch pine, eight feet long is used, and these are kept painted with a pleasing mineral paint.

In the spring when no longer needed, I store the boards in a dry place ready for the next season.—CHAS. WALTZ.

The Culture of an Excellent Market Plant: Cytisus racemosus.

An English exchange gives the following account of the delightful spring flowering plant, Cytisus racemosus, and its culture for the London market. It is a plant which more of our florists could give attention to with profit as a plant for early spring sales.

This fine old greenhouse plant is nowhere seen so well grown as in Covent-garden market. Charmingly flowered bushes of it from 18 inches to 2 feet in height, and as much through, may be seen in pots never larger than 6 inches or 7 inches in diameter in thousands here.

Being so hardy, it is also a good plant for the amateur cultivator who has only a limited supply of heating power in his greenhouse, or even as a window plant, as a slight frost will not injure it. A temperature of about 40 degrees is quite sufficient for it in winter, indeed better than a higher one.

The best time to propagate this plant is in the month of September, by which time the summer growth has become moderately firm; old rough specimens will at this season furnish a good supply of cuttings. These should be taken off abont 1½ inches in length with a sharp knife. Make a clean cut below the lowest joint and remove the leaves about ½ an inch up the stem. The soil used should be loam with plenty of silver-sand; well drain the pots (6-inch ones are the best) and fill them moderately firm with soil to within ½ an inch of the rim, place on this a layer of sand, then insert the cuttings, moderately thick, and give water with a fine rosed-pot to settle the sand around them; then place them in a frame in a shady position on a good thick coating of coal ashes. Keep the sashes tolerably close for a time, merely giving a litle air every morning. Pick off all decayed foliage, and keep the sand in the pots just moist.

Amateurs will find this Cytisus somewhat more difficult to strike than Geraniums. After the cuttings have been in a few weeks they will, generally speaking, have formed a callus. This can be known by their having the appearance of starting into growth, and when that happens they may be removed to a shelf near the glass in the greenhouse. Be sure the soil in the pots is not allowed to become dry.

When rooted, pot them off carefully into small thumb-pots, using similar mold to that alluded to, replace them on the greenhouse shelf, and if the pots could be set on a little Cocoa-nut fiber, so much the better; or if a pit is available, with means of excluding frost, that is the best of all places for them, as they delight in all stages of their existence in a cool, moist atmosphere. When the soil becomes moderately dry, give it a good soaking of water, and afterwards keep the plants through the winter just fairly moist at the roots, and that is all.

By the end of February the points of the shoots should be pinched out, which will induce them to break out and become bushy. They may now be shifted on into 3-inch pots, and be encouraged to grow freely, giving them abundance of air on all favorable occasions. When all danger from frost is over, re-pot them into 4-inch or 5-inch pots, according to their strength, potting firmly. Now set them out-of-doors on a good hard bottom, so that worms cannot work into the pots. Place the plants thereon in the form of a convenient width for watering, etc.

Be sure not to crowd the plants. The spaces between the pots should be filled with coal ashes to obviate excessive watering.

As the plants progress in growth, keep them well pinched in, so as to form compact bushes, and in hot weather syringe them freely night and morning, and be sure they are never dry at the root.

This is not a plant that requires much manure, but I have found a little soot-water very useful occasionally; it causes the foliage to assume a good dark-green color. By the end of August they should be ready for their final shift into the pots in which they are to bloom—a 6 or 7 inch pot will do. About a week after they are potted they should receive their final pinching in, as if this operation is deferred to a later day they do not produce such fine flowers.

Keep them out-of-doors until there is danger of frost, and then remove to their winter quarters, which may be either a pit or a greenhouse; if to the latter, give them the coldest end. There will now be little to be done beyond attention to watering and ventilation until the spring, when they may be aided by a little weak manure-water, and freely syringed until the flowers show color.

By the month of March the point of every main shoot will produce a flower-spike, and the whole plant will shortly be a blaze of golden-yellow blossoms. This plant is not subject to insect pests of any kind, and it can be grown to perfection in a small state without the aid of either stake or tie.

Received at this Office.

CATALOGUES, ETC.—FIGURES INDICATE PAGES.

Adams, J. W. & Co., Springfield, Mass., Nursery, 8.
Bartelds, T. & Co., Lawrence, Kas., Seeds, 96.
Bell, J. J., Windsor, N. Y., Florists, 16.
Bonner, E. & Co., Xenia, O., Florists, 24.
Bullard, E. M., West Swanzey, N. H., Seeds, etc., 20.
Cole & Bros., Pella, Ia., Seeds, 40.
Cox, S. M. & Co., St. Joseph, Mo., Seeds, 4.
Drohlsch, G., Columbus, O., Roses, 60.
Ford, Frank & Sons, Ravenna, O., Seeds, etc., 35.
Goodell, L. W., Dwight, Mass., Seeds, 32.
Haage & Schmidt, Erfurt, Prussia, Seeds, Plants, 300.
Harman & Son, South Bend, Ind., Seeds, 42.
Henderson Peter, & Co., New York, Florists, etc., 140.
Hill & Co., Richmond, Ind., Florists, 80.
Hunt, M. A., Terre Haute, Ind., Florist, 80.
Johnson & Stokes, Philadelphia, Pa., Seeds, 62.
Landreth, D. & Sons, Philadelphia, Pa., Seeds, 32.
Maule, Wm. H., Philadelphia, Pa., Seeds, 52.
Moon, Sam'l C., Morrisville, Bucks Co., Pa., Nursery, 4.
Root, J. B. & Co., Rockford, Ill., Seeds, 48.
Roozen, Anton & Son, Overveed, Holland, Bulbs, 86.
Storrs, Harrison Co., Painesville, O., Florists, etc., 136.
Templin, L. & Sons, Calla, Ohio, Plants, 74.
Vick, James, Rochester, N. Y., Seeds, 136.
Will, O. H., Bismarck, Dak., Seeds, 18.
Wilson, Samuel, Mechanicsville, Pa., Seeds, 96.

MISCELLANEOUS.

"Egyptian Winter Onion Culture," by M. T. Thompson, E. Rockport, O.

"Transactions of the Maine State Pomological Society for the year 1886;" forwarded by Samuel L. Boardman, Secretary, Angusta, Maine.

"Manitoba, Free Homesteads in;" Hon. D. H. Harrison, Minister of Agriculture, Winnepeg, Manitoba.

"University of Wisconsin, Department of Agriculture, List of Farmers' Institutes from November 1st, 1887, to March 28th, 1888." W. H. Morrison, Madison, Wis.

"Shade and Ornamental Trees suitable for Cultivation in Queens Co., N. Y.;" by Wm. Falconer, Long Island, N. Y.

Perlich's Fumigator and Insect Destroyer; Herman Perlich, Baltimore, Md.

"Proceedings of Fifth Annual Session of the Louisana State Grange, Patrons of Husbandry;" H. W. Lewis, Secretary, Osyka, Miss.

Bulletin No. 15, U. S. Dept. of Agriculture, "The Icerya or Fluted Scale;" from C. V. Riley, Division of Entomology, Washington, D. C.

Bulletin No. 13, Part third, U. S. Dep't of Agriculture, Division of Chemistry. "Fermented Alcoholic Beverages, etc.;" C. A. Crampton, Washington, D. C.

Central Experimental Farm, Dep't of Agriculture, Bulletin No. 3, Ottawa, Canada, "Testing Vitality of Seeds." Wm. Saunders, Director.

"Winter Care of Horses and Cattle;" by T. B. Terry, Hudson, O.

Agricultural College of Mich., Bulletin No. 31, "Annual Report of Professor of Horticulture and Landscape Gardening for 1887." L. H. Bailey, Lansing, Mich.

"Report of Commissioner of Agriculture for 1887;" by Norman J. Coleman, Washington, D. C.

"Our Native Plants;" by W. A. Manda, Gardener at the Botanic Garden of Harvard University, Cambridge.

Bulletin No. 43, N. J. Experimental Station; "Analysis of Fertilizers, etc." Geo. H. Cook, Director, New Brunswick, N. J.

Agricultural College of Michigan, Bulletin No. 28, Botanical Department. "Forest Products of the Museum of Economic Botany." W. J. Beal, Lansing, Mich.

"Memoranda of the Origin, Plan and Results of the Field and other Experiments, conducted on the Farm and in the Laboratory of Sir John Bennett Lawes, Bart, L. L. D., F. R. S., Ratothamsted Herts, Eng."

"History of Michigan Horticulture;" by President T. T. Lyon, being a part of the 17th Annual Report of the State Horticultural Society of Michigan, forwarded by Chas. W. Garfield, Secretary, Grand Rapids, Mich.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. MARCH, 1888. No. 6.

Spring is the First Month.

No matter what the almanac may say
The year begins with the first month of Spring.
When the snowdrifts into rivulets slip away,
And bluebirds of the coming Violet sing:
When March winds sweep the stairway of the rocks.
From rubbish heaps of Autumn-leafage clear;
And the sun turns back from the equinox
To welcome and lead home the baby Year.
—*Lucy Larcom.*

A HINT for the present year. Learn the correct name of every tree, vine and plant on your grounds. It is a task in which the youngsters of the family should also take a part.

STEPS TO ENRICH LAND RAPIDLY. Those desiring to quickly enrich ordinary soil for market, garden or other crops requiring high fertility, are advised to take the following course: Manure well in the spring and plant Potatoes; dig these in good time and sow Rye; spread manure on the Rye in early winter evenly; in the spring plow under the Rye and manure to bury them; apply ashes and superphosphate, harrow thoroughly, and the land will be ready for Cabbages, early Corn, Squashes or any crop of similar needs.

A NURSERY or reserve garden in some form should be connected with every fruit grower's and gardener's home. In this both the fruit and ornamental trees needed on the place may be grown to advantage. Both the boys and girls could be taught to graft and bud young trees, Rose bushes, etc. It is a very simple work and can be learned in a very short time by almost any boy who is ten years or more old; it is very interesting work for boys, and under proper direction the growing of trees makes the boys more strongly attached to the home. An orchard grown from the seed planted by the owner is looked upon with far greater interest than one from trees that were not watched over and cared for when they first came from seed.

GROWING FREESIA REFRACTA ALBA. I notice Cape Bulbs, page 76, January number. I am inclined to think that the usual practice "potting in the fall, keep cool till they begin to grow and root well" may be improved upon, in some things. I get the better Freesias potting in rich sandy soil, ten bulbs in a six inch pot, give a soaking watering and set at once on the bench of the greenhouse, then water only to keep moist until growing, and the faster growing the more water until blooming; then withhold water to moist only to gradually ripen the bulbs. Such planted September 1st, bloom December 15th, ending January 10th, and ripens the bulbs February 1st. I get stronger and better flowers thus than by the old method. I take pleasure in learning the old ways, and then try other ways, seeking to make two blades grow where one grew before as a part of the work of an amateur florist. —*John Lane, Chicago, Ill.*

FOR NEW YORK STATE HORTICULTURE. Elsewhere the resolutions passed by the Western New York Horticultural Society at its last meeting, in favor of enlarging the field of the society to the entire State of New York are published. A leading object had in view in this change was to give the people of the state at large the benefit of the valuable published reports of the society, and in a way similar to that done in Michigan, Ohio, Iowa and many other states for distributing similar horticultural reports. Heretofore reports of this the leading and almost only New York State horticultural society have been published in numbers only a little exceeding the number of members included in the society, and at the society's expense. But now a petition is to be addressed to the Legislature for the small appropriation of $2,500 a year for so enlarging the edition of the annual report that citizens all over the state may receive copies. This is a move which we have for years felt favorable towards and we trust that the appropriation will be granted without serious opposition or delay. It should be borne in mind by our legislators that while the headquarters of this society have been at Rochester, the seat of the nursery trade of the state if not of America, it has as a comparatively local society already been of immense indirect benefit to the fruit growing and other horticultural interests of all parts of the State, but without expense to the State. When now the society comes forward with a project for advancing these interests more directly and widely just by a wider distribution of its reports (and for this only it asks aid), second, to lead to a larger numbering of its members throughout the state, it should promptly meet with the encouragement which it deserves. All lovers of horticulture in New York are urged to present the case of the society in this its advance movement to the attention of their representatives in the Assembly and the Senate at Albany, asking them to support and work for the measure when it comes up.

Horticultural Notes by Samuel Miller, Bluffton, Mo.

A SOUTHERN TRIP. This communication dates from Shreveport, Louisiana. Up to this date (Jan. 14) the thermometer has at no time indicated below 30°, although recently there was sleet on the trees for two days and nights. It was a rare sight to see the Magnolia grandiflora, Wild Peach, a native here, and also an Evergreen, bowed down with the ice. Have heard the frogs croak in the ponds, seen butterflies and other insects out. Marshall, just 40 miles west of here, is a week later, although very near the same latitude.

AN EXTENSIVE SOUTHERN ORCHARDIST Mr. G. W. Stoner (with whom I am staying), has extensive orchards and fruits of all kinds that will grow here. He has experimented much with all the new things, and a new beginner would have plain sailing if he consulted this gentleman. He has in one block 3,000 Caddo Chief Plum trees, besides an unlimited number scattered over the place. This is the earliest of all Plums, and commands a good price. They ship them in Strawberry boxes and crates North, East, South and West. The Caddo Chief Plum mentioned above is hardy at Bluffton, Mo., and will no doubt be so much farther north. He has 1,300 Peach trees on one little orchard that are in most admirable condition, trained according to my notion in all respects, except he does not head them back. Think of ten thousand Pear trees, a good proportion of them already in bearing, these he has. The Howell is his favorite and commands good prices. His last year's crop averaged him $3.00 per bushel. This undoubtedly is a Pear region. I have looked over thousands of his trees and find so little blight that it is unimportant. He never took much stock in the Le Conte nor Kieffer Pears, and I think it is well.

JAPANESE FRUIT CULTURE SOUTH. The Japanese Persimmon Mr. Stoner has grown most successfully, and if I was to go into the fruit business here this would be one of the first to plant, for it is destined to take a prominent place among fruits in the South. He sent me specimens in the fall that measured ten inches in circumference, and they were delicious; commence bearing in two years from planting, and don't know what fail is. The sooner some one gets the names correct, describes them carefully, telling the early, medium an late ones, with the best way to treat them in ripening, the better for their success. That there are some of them better suited for drying than others there is no doubt, and it should be known. If as I have recently seen stated that they do well top grafted upon our native varieties there is a grand field for its multiplying, as there are large groves of the natives in the South. What I have seen and eaten of this fruit, and the success of its cultivation in Louisiana, I predict great things from. When a tree three inches in diameter at the ground will produce $10 worth of fruit in one season it tells for itself. I advise all our readers in the south who cultivate fruit to go in on them strong.

The Japanese Plums are also receiving Mr. Stoner's attention, Kelsey's in particular. It is needless to state all the different semi-tropical fruits he is raising here, but I see enough to convince me that those who contemplate going to a warm climate, will do well to look around before going to California and stick a small fortune in land before they begin to grow anything. When a man is bordering on three score and ten, it is too late in life to start a new enterprise in a distant land; but were I twenty years younger, would certainly try my fortune here. Land is cheap, prices for fruit good. With the shipping facilities at hand it pays well to ship early fruits North. They tell me that the heat seldom reaches 100 here, while that degree is quite common in my latitude in Missouri. I have now been here ten days, and not ten hours of clear sunshine in all that time, which prevents me from applying the term Sunny South, but this has been an unusual wet and cloudy spell of weather. There are a number of lakes, some of them pretty large, lying northwest of here, which I think has a favorable influence on fruit.

TREES GIRDLED BY MICE. There is seldom a spring comes, but the above may be seen, and when merely the outside bark is eaten off the banking of the earth over the damage is sufficient. But if eaten in to the solid wood, the tree is as good as gone unless proper means are applied.

The plan of procedure in the latter case is to cut scions, say six inches long with a little bend in them. Shave the inside about an inch to a sharp edge, cut a little of the outside off near the point, cut into the bark of the tree above the barked part upwards so as to invert the graft. Lay the graft so as to see where to cut into the bark on the lower side. Bend the graft so that when you insert it it will fit tight above and below; cement well with wax at both ends, then bank earth over all. A tree two inches in diameter should have at least two grafts; one three inches, thin grafts and so on up to six inches in diameter, for I have saved trees as large as that.

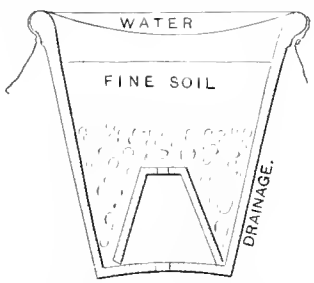
The grafts will make the connection, and the tree will grow on as if nothing had happened to it. I have had trees close all around in a few years, and bear fruit sooner than others beside them never injured.

TOMATO AND EARLY CABBAGE seed can be sown in boxes, in the house in a warm room, and will have a good start by the time a hot-bed can be safely started outside, into which they can be successfully transplanted. Give them all the sunshine possible, turning

the box daily so as not to have them leaning one way too much. I am not posted as to the best early Tomatoes, but the Early Jersey Wakefield and early Winningstadt Cabbages are our favorites.

The Sowing of Fine Seeds.

Those who have occasion to sow the finer kinds of seed like Echeveria, Calceolaria, Mimulus, and even Tobacco seed, know the difficulty of succeeding with them, for no other reason than that of their minuteness.



The Sowing of Fine Seeds.

Cover such seeds much with the finest sifted soil and the seedlings have difficulty to penetrate to the surface. Let the cover be very light and there is danger that the seeds will dry out injuriously to the germs. In either case much difficulty arises from watering, for the finest rose will wash and disturb the soil and the seeds detrimentally.

To overcome all ordinary difficulties of sowing such seeds we have for years employed the means which we illustrate herewith. This consists of first carefully preparing the seed pot for sowing by providing ample drainage in the bottom, including an inverted small pot, as shown in the engraving. Over the drainage is placed a layer of finely sifted soil, to be, say two inches deep, and on which, after firming it evenly with the bottom of another pot, the seed is sown. The seed is scattered as evenly as possible over the surface, and if it be covered at all (a thing not absolutely necessary) the coat is a very light one indeed, and consisting of the finest of soil.

The peculiarity of the method consists in never applying a drop of water directly to the surface of the seed bed. A first watering of the soil is accomplished by holding the pot to half its depth in a pail of water until the earth is thoroughly moistened by the water entering the hole beneath. Then over the top of the pot is placed a cover of strong, white paper, the best kind of printing paper answering, and this is tied down under the rim of the pot. On this paper water is poured, which soon causes a depression in the center that will contain a fourth inch or more in depth of water at the center.

All the attention the pot now needs is to keep water on the paper. This will provide all the moisture needed to the soil below. The paper should be untied and removed occasionally. After about a week and as soon as the seedlings are fairly through, and are forming their second leaves, it must be entirely removed, after which watering with a fine rose will do no harm.

Growing Early Tomatoes.

A large grower of Tomatoes has found the following plan of raising plants, all that can be desired. He rolls strips of resin paper into cylinders, three inches in diameter and six inches deep, locking the ends by driving two tacks through the paper and clinching them on a piece of iron pipe as an anvil or block. These bottomless cups are arranged in the frame and filled with the soil in which the seed is planted. When the plants are ready to set out they are large and well rooted, and are transplanted with the cylinder around them. This is slipped up so as to project three inches above the ground, and making an obstacle over which cut-worms will not climb, and so the danger is evaded, as well as all risk of checking the growth by transplanting. He has set out plants already in blossom without any check by means of this device.

Dr. Asa Gray.

W. A. MANDA, CAMBRIDGE, MASS.

In the death of this distinguished man, of paralysis, on the night of January 30, America lost her greatest botanist, Harvard University one of the most celebrated professors, and the young botanist as well as the public in general a kind teacher and willing adviser in all pertaining to nature. The City of Cambridge has also lost an esteemed citizen, where he was beloved and respected by his many friends.

Dr. Gray, notwithstanding his study and large daily correspondence, was most happy to help or advise any one that needed his help, either in correcting opinions or naming plants, and thus lots of his valuable time was lost, and often he could be seen at nine or ten o'clock in the evening busy examining his dried specimens and writing his Flora of North America, a work for which only he seemed to live, and yet this only wish of his to complete his great work was not granted him.

The whole of Dr. Gray's life was that of study and usefulness. No man in this country has ever accomplished so much in this particular branch of science. Distinguished and honored, not only at home, but in all the civilized world, Dr. Gray remained modest, unassuming and simple, which only added beauty and reverence to his greatness. At his advanced age of 78 he retained his agile step, clear voice and bright eyesight, so that it seemed as if Nature itself in return for his devotion had him especially favored, for it was only from mature age that he succumbed. But he lives among us still; many of us can remember his pleasant face, those kind words spoken with freedom, and we all see him in his labors he left for the benefit of us all. We all can consult his many books which he wrote during his useful life, as well as the numerous series of articles and addresses in the various periodicals on botany and horticulture, and the transactions of the numerous scientific societies of this country, as well as of Europe.

Resin of the Vine.

D. S. MARVIN, WATERTOWN, N. Y.

The resin contained in the sap of our native Grape-vines has, so far as I know, heretofore escaped the observation and study of our own viticulturists. We owe our knowledge of it to the more careful and painstaking studies of the viticulturists of the German experimental stations.

This finding of resin in the sap of our several native species of vines throws light upon and explains why our vines resist the attacks of the *Phylloxera vastatrix* so much better than foreign vines. Wherever the fiber of the roots become punctured by the beaks of these minute insects, the sap exudes, carrying with it these resinous compounds, sealing and protecting the wounds, so that there is but little waste of the sap, and the wounds are sooner healed, thus preventing the rot and destruction that attend such injuries to the roots of foreign vines.

There is another important difference between our own and foreign vines explained by this same fact of the existence of resin in our own. I refer to the different styles of pruning common in Europe and our Atlantic States, necessitated by the difference in species of the vines cultivated.

When we prune our vines according to the several systems practiced in Europe we find that after a few years have intervened the wood becomes clogged, the sap does not circulate, the leaves are asphyxiated and fail in their normal action and the vines dwindle. This is caused by the resin of the sap being deposited along the channels of circulation and filling up the pores.

And this fact explains why what is known as the Kelly's Island system of pruning is more successful than any other. By this system there is never any old wood allowed above ground, where the dry air hardens the sap and finally destroys the circulation. The moisture of the soil in this system causes a more liquid condition of the sap, with consequent freer circulation.

Let our viticulturists study and attend to this new and important topic.

A Valuable Transplanter.

When the annexed engraving of the improved two bladed transplanter was made, we were not aware that this implement could be had in America, although we had known of its use for several years in Europe. Now we are glad to see that several dealers in implements in this country are offering it, and the tool no doubt will soon become familiar with American cultivators.

The nature and use of the implement is so simple that no description besides the engraving is required. It is seen at once that its value consists in enabling transplanting to be done easily and quickly, but more important still, without requiring that the soil be loosened from the roots. As much soil as the shovels will hold in their grasp is transplanted along with the plants. Every experienced cultivator understands the advantages to be gained by such a course. There should be little or no wilting of the leaves following on resetting plants, even when in full growth, with this transplanter.

In almost every department of the nursery and garden such a tool could find frequent use. For transplanting young trees, evergreens, shrubs, roses, hardy plants, etc., it would find perfect adaptation. The same would be true of its use in transplanting Strawberry and other fruit plants, Tomatoes and various other vegetable plants, annual flowering plants, etc., to short distances. We think also it could well come into use for the fall-lifting of such of the last named class as are designed to be wintered over. This transplanter is made in several sizes.

Select Lists of Roses.

MRS. L. H. GALE, BARTON CO., MO.

There is so often a call for a select list of Roses, either for their free blooming qualities, or vigorous and perfect growth, that I thought perhaps such a list at this time would be acceptable to a large number of flower lovers.

A Valuable Transplanter.

In enumerating the most vigorous and free-blooming sorts, we will notice only those easily obtained. Of the Teas the best bloomers are Comtesse de Labarthe, Sombreuil, Coquette de Lyon. Each of these Roses is beautiful, and the rarest Teas excel them only in symmetry or their unusual mingling of colors. Safrano, Bon Silene and Isabella Sprunt bloom quite as freely as those just mentioned, but their attraction lies principally in the beauty of their buds, the expanded flowers being quite loose. For cut flowers, bouquets, and particularly for personal adornment, they are

indispensable. Adam and Madame Margottin are the thriftiest and most floriferous of the larger and more beautifully formed flowers of the present class.

When we touch the subject of color, the number of Roses worthy of a place in the choicest selection is so large that it is difficult to place a limit to their number; but the following list contains only the darker Roses and those in which the combination of colors is rich and beautiful: Jean Ducher, Letty Coles, Mad. Margottin, La Chamois, Duchess of Edinburgh, Homer, Mad. de Vatry, Marie Duchess. Several requests have been made for a list of the hardiest Tea Roses, those which endure severe winters with the least injury. So many circumstances of location, condition of the plants and the character of the season affect the hardiness of Roses that no two persons would be apt to agree on this subject, but a list is appended of those that have been known to survive hard winters here and farther north: Homer, Sombreuil, Comtesse de Labarth, Marie Ducher, Madame Vimberoz, Marie Van Houtte, Adam and Bougere. No where south of here are Tea Roses seriously injured by frost except in the case of unusually severe winters.

In making a selection from among the Hybrid Perpetuals one of the first questions which arises is: Which are the most constant bloomers? There are a few kinds that flower almost as freely as the Teas or Bourbons, but these are invariably dwarfer than the other Hybrids, of weaker habit, and not quite so hardy. Mad. Chalers Wood, Gen. Washington, Giant of Battles, and the white hybrid Noisettes Boule de Neige, Coquette des Alps and Perle des Blanches, bloom throughout the season with more or less freedom. Of the strong, sturdy hybrid perpetuals, Paul Neron, Victor Verdier, Gen. Jacqueminot, Souvenier de Charles Montault, Antoine Mouton, Tournville and Gabriel Tournier, are the most inclined to produce flowers during July and August, and their fall flowering is usually good. It will be observed that Gen. Jacqueminot alone of the dark Roses is included in the above lists. Those grand Roses Chas. Lefebre, Jean Liabaud, Mad. Victor Verdier, and Louis Van Houtte seldom bloom from June to September, but their every blossom is a treasure. Mabel Morrison and Merville de Lyon are the best whites.

Agrippina, a Bengal variety, is a perfect gem in the fall. In the hot summer months its blooms lose color, but as cool weather comes on they assume a rich, velvety crimson, and frost always finds its bushes loaded down with clusters of dark, rich flowers, beautiful both in color and form.

How to Apply Nitrate of Soda.

JOSEPH HARRIS.

"Don't you think," asks N. Y. L. on page 113, "it would be more economical, Mr. Harris, to make at least two applications of those 500 pounds of nitrate per acre?"

It depends on the weather. Farmers and gardeners always have to take more or less risk. In applying ammonia it has to be converted into nitrate before the plant can use it, and the nitrate formed from ammonia or from stable manure is as readily leached out of the soil as that which is applied in the form of nitrate of soda.

N. Y. L. says, "Nitrate should be applied only when there is a crop or will immediately be a crop to use them."

Certainly no one pays 3 cents a pound for nitrate of soda and sows it on land for the fun of it. If fertilizers are not wanted to feed the plants, it is folly to use soluble nitrates.

Nitrate of soda will not leach out of the soil unless there is water to carry it out. On this farm there is a main drain laid with ten-inch tiles, into which a series of underdrains on forty or fifty acres of land discharge the water. During the winter and spring the ten-inch pipes run to nearly their utmost capacity, but the flow gradually lessens and about June 1st stops entirely. In March or April a very heavy rain will increase the flow, but I think we have never had a rain in May or June, or July, or August, or September, or October, or November that affects the underdrains. The drains run in May. A heavy rain at that season rarely, if ever, increases the flow of water. The water that is discharged comes from springs or from a saturated subsoil, not from the surface soil.

On this farm, therefore, after the land is ready to plow and work in the spring, there is very little risk in sowing nitrate of soda. It will not leach out of the soil, for the simple reason that the surface water sinks to the subsoil or to the underdrains. On a side hill some of it may be washed into the valleys, and as I said before we have to take some risk. We are used to it.

If we sow all the nitrate at once, we may occasionally lose a little; if we sow at twice the soil may be so dry that the second application can do no good. And I think those who have had more experience in using nitrate of soda, or sulphate of ammonia, or fertilizers of all kinds, find that, as a rule, they get a better result from sowing early than from sowing late.

My answer to N. Y. L.'s question therefore is, sow the 500 pounds per acre early in spring, and if you lose it from leachings, sow enough more to make good the loss.

The Japanese Aralia as a House Plant.

We this month present an engraving of one of the most admirable window plants in cultivation, namely, Aralia (or as the botanists now say, Fatsia) Japonica. Our engraving was made from the photograph of a plant that had for five years been grown in a drawing room. No better proof could be adduced of its ability to endure the unfavorable conditions peculiar to window gardening than this picture. From the grower of the plant we have the following particulars:

THE JAPAN ARALIA, FROM A SPECIMEN GROWN IN A ROOM FOR FIVE YEARS.

"It was bought, quite a young plant, from a nurseryman's greenhouse, and appeared none the worse for the sudden change from the moist atmosphere of the conservatory to the much dryer one of the drawing-room. Fire-heat and gaslight seem to do it little harm as long as the roots are kept well supplied with moisture. An occasional pinch of fertilizer helps to keep it in condition.

"This plant has only been re-potted once since I got it. The pot which directly contains the roots is not shown in the engraving but an outer one, and between this and the other a layer of Moss is kept. The Moss is, I think, an advantage; as besides making a very pretty fringe of green round the pot, it helps to keep the moisture from evaporating too rapidly. Had the photograph been taken a month later, when the young leaves at the top were fully developed, the plant would have looked much better.

"This plant has never flowered, but two of my friends have Aralias in flower, one of which has been kept constantly in a sitting-room, and the other, though in a greenhouse over winter, is now flowering in the open air."

"To our correspondent's remarks we may add that the absence of flowers in a plant capable of showing the magnificent leaf development of the Aralia should be no objection to the plant. At best the flowers of this species are not remarkably attractive. In a glance over a number of florists' catalogues we observe that the plant is advertised by John Saul, Washington, D.C. Other florists may also be able to furnish stock of it.

The Importance of Good Seed.

WM. H. YEOMANS, TALLAND CO., CONN.

Every grower ought to feel the importance of possessing good seed for the production of his crops. It should possess that quality of vitality that not only makes sure the germination of a large proportion but that also gives a vigorous start to the young plant.

This idea is best illustrated by taking a piece of corn; suppose that the seed is so wanting in vitality that where four or five kernels are dropped in each hill, one at least

in each hill fails to germinate; it is plain to see that at least one-fourth of the seed would fail, and so the crop correspondingly diminished. Every farmer has, or at least ought to have, a sufficient amount of surface devoted to the vegetable garden, and in the matter of seeds the same rule with regard to seeds will apply, and here the effect is vastly more disastrous. It is surprising to what an extent fraud creeps in in the business of seeds such as are placed with country merchants for sale to customers.

In some instances where hopes have been centered on such for the production of an early crop of some particular kind, how keen has been the disappointment on finding that the seed employed possessed no vitality whatever. Seed that possesses sound vitality is of inestimable value, while that destitute of this important principal is dear even as a gift. We do not mean to say that seed dealers really mean to be dishonest, but we do say that the seeds that are hawked about the country should be looked upon with suspicion. Even though they are offered at moderate rates they are actually much more expensive than those that can be procured at reliable houses.

With the present facilities offered by seed dealers, cultivators can deal by mail with those who have earned an enviable reputation by honest dealing, and can secure such varieties as they want. And though appearing to cost more at first such will be found to be much cheaper in the end.

A new idea is being started in the line of manuring the seed, as it is called, before it is planted. If the principle proves useful and can be made available with garden vegetable seeds, doing what is claimed for it, it will be a rich boon to all who desire to give increased vitality and vigor to the seed and hasten its germination. Anything that will accomplish this will readily find favor and be much sought for by the gardener.

Grafting Small Grape-Vines.

BY DR. G. STAYMAN, LEAVENWORTH, KANSAS.

Our former article related to grafting vines in the vineyard and nursery. We now give our mode of grafting young vines after they are taken up from the nursery bed. We prefer stocks or vines two years old either grown from seed or cuttings. The latter are smoother and more easily worked. It makes no difference what species or varieties they are so they are strong growers and healthy, for their identity is lost after the second year.

They should be taken up in the fall and stored away free from frost, and accessible when wanted. In March we commence grafting, by first selecting the stocks and cutting them three inches long from the bottom of the lower tier of roots, with a smooth stem above where they are to be grafted. Shorten in all the roots if fibrous to about one-half inch, but if long and straggling about one inch long. We then splice and tongue-graft these with scions about nine or ten inches long. (Those grafts that were too small for vineyard grafting we can dispose of in this manner).

To do this whip grafting in a proper manner, the slope should be made about one inch and a half long with a sharp knife, with a tongue cut in both stock and graft and the rough outside bark taken off from both, on the side at least where the inner bark meets. Then press the graft and stock tight together within the tongue of the other and wrap with light twine or waxed grafting thread. We make no attempt whatever to have the grafts of the same size as the stocks so the inner bark will meet on both sides, as that is useless and a waste of time.

We, however, use the larger grafts on the larger stocks, as there is more substance in both, and they generally make firmer and better proportioned grafts, but this is not absolutely necessary. We recommended taking off the outside rough bark over twenty-five years ago when we first discovered its importance, yet but few, if any, appreciated it.

It is, however, a well recognized fact that a grape cutting will root sooner and better if the rough bark is taken off the lower end, or the end slightly mashed so as to burst

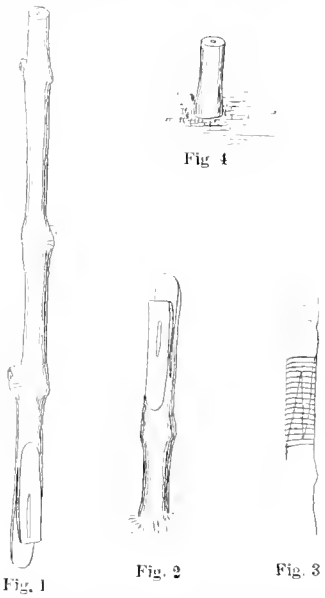


Fig. 1 Fig. 2 Fig. 3 Fig 4

Fig. 1. Graft stoped and tongued. Fig. 2. Stock prepared for graft. Fig. 3. The two united and tied. Fig. 4. Projecting part after planting.

GRAFTING SMALL GRAPE-VINES.

the bark and cutting, than if not so treated.

Accordingly we find it an advantage in layering the Grape to cut through the bark into the wood or make a slit or twist the layer to burst the bark and wood.

The same principle holds true in grafting the Grape by taking off the bark, the moist soil comes in direct contact with the graft, and it unites and roots much sooner, and starts into active growth before the dry weather sets in.

For a similar reason we use a long graft that will reach down in the moist soil so the union will take place at once. It is inexpedient to make the splice longer than above mentioned, for half an inch of perfect match of inner bark is better than six inches, for the simple reason that the vital energy concentrated on a small space will sooner unite than when diffused over a large space. For a like reason it is unnecessary to let the end of the graft extend below the splice as we have seen recommended, for it will throw out roots sooner at the splice than six inches or so below it, as the conditions and temperature at that point are more favorable. When the grafts are finished pack them away in damp sawdust until you are ready to set them out. If only a few, however, are to be grafted, you would better defer the work until the time to set them out, and then set in open ground at once.

The soil they are set in should be deeply stirred, finely pulverized, and made over. Then stretch a line and take a sharp, bright spade and push the blade with your foot into the ground the full length of it close by the side of the line, and push the top or handle from you, which will open a space back of the blade large and deep enough to set the grafts in.

An assistant should have the grafts in a bucket of water and set and hold them in place until the spade is withdrawn. Then thrust the blade into the ground a few inches ahead of the graft, press the soil tight against it, and so continue until the work is done. Cultivate deeply and often throughout the season, and keep the weeds down. If all the work is well done, at least ninety-five per cent of the grafts will grow.

Strawberry Growing in Oswego County.

L. J. FARMER, OSWEGO CO., N. Y.

Our soil and climate seem to be peculiarly adapted to the crop. New York City people say our Wilsons are not surpassed in quality, so a review of our methods may be of interest to others. We plant in spring in rows five feet apart, the plants one foot apart in the row. By winter there is a matted row about three feet wide, leaving a two foot path for picking.

VARIETIES. The Wilson is mostly grown, but many Crescents also. The Wilson seems to revel in the muck beds of Scriba and in other moist soil, but will not succeed on sandy soils, and here the Crescent does well. New comers are tried, but most of them are discarded. Some few obtain fancy prices for Sharpless, but five quarts of the Crescent can be grown as easily as one of the Sharpless. Recently a new Orange County seedling has come forward which receives much praise. The original plant attracted attention by holding the fruit well up from the ground, and by its large size. The plant is dark green, and the most vigorous grower I have ever seen. The fruit is light scarlet, but is much larger than Capt. Jack. It is called the Burt Seedling.

CULTIVATION. The horse is made to do most of this work. Some growers get along by hoeing only twice with an occasional hand weeding after the plants begin to run, but those who hoe more get better fruit and more of it. However we do not give the highest cultivation as after one or two crops the plants are turned under.

MULCHING. Before winter some growers cover their fields with straw, while many give no protection at all. I favor protection, for fields unprotected were injured by driving winds last winter (the ground being bare of snow), and thawing in the spring. Those who give protection draw the straw into the paths for convenience of pickers, and those who do not, allow weeds to grow, which keep the dirt from spattering on the berries in rainy weather. We give no spring cultivation, although it is beneficial should droughts occur. Last spring I dug plants from between the rows, which loosened up the soil quite deep. I mulched these rows like the others, and in the drought of fruiting time we picked the largest and best fruit from these rows.

PICKING. Before picking time a packing house is made, the crates overhauled, and every thing made ready for business. We use the Baker crate, holding 36 quarts, invented and manufactured near Oswego. The commission men prefer this to the 32 quart package.

Most of the pickers are obtained from sections remote from railroads, where Strawberries are not grown. They receive one and one-half cents per quart and board, and are paid at close of season. For picking we use 4 quart picking stands or "handies" with no legs. For keeping account with the pickers, we have a system invented and patented by a young man of our county. It consists of a punch like a conductor's and cards the shape of shipping tags, checked off into four rows of little squres. On one half of the card in each of these little spaces is printed "1 qt.," on the other "4 qts." The whole number of qts. on the card is 100. At the top of the card above the place for the picker's name, is a hole for passing a string through. The string is placed around the picker's neck, the cord hanging loose.

In the morning each picker as he arrives is given a row by the man having charge of them, and as fast as each fills his baskets they are exchanged for an empty set by the same man, who also punches to correspond with the berries picked and carries the berries to the packing house. An active man will tend 20 to 30 pickers, carrying as he does four handies or sixteen quarts to a trip.

When the berries arrive at the packing house they are taken from the handies, leveled off and then placed in the crates. We do not "plate," as buyers will turn out a basket, and if the berries are found to be poor in the bottom, the whole crate is condemned as inferior stock. Most pickers, especially women, are honest, but some put in leaves or rotten berries. To correct this a basket of berries is frequently turned out in the presence of each picker and if faulty the picker is given a little advice. If too much scolding is indulged in, the pickers will soon be sitting on the fence. When the patch is picked over the berries are drawn to the station in spring wagons

SHIPPING. We ship by freight to New York and Philadelphia in refrigerator cars. The Philadelphia train starts in the afternoon, the New York train in the afternoon or evening. They arrive at their destinations about midnight on the following day, ready for the early market, which is about two or three o'clock in the morning. Those who furnish ice for the cars are charged sixty cents per crate for transportation to New York, all others sixty-five cents. No charge is made for returning empty crates. These are generally all returned with baskets, the latter much changed about from grower to grower and with New Jersey parties. We use no gift crates, and growers are much prejudiced against them. Crates are packed in the cars four or five tiers high, and certainly a flimsy gift crate on the lower tier would not stand the immense weight above, but would break and allow the berries to be crushed and spoiled.

PRICES. Most growers contract for 5½, 6 or 7 cents per quart, but a good many send on commission. Some years the latter lose, oftener they make. Certainly the contract plan gives no advantage to the man that produces superior stock. My plan is to secure a reliable commission house, cull my berries and put them up in an attractive style. By so doing I hope to secure a reputation such as is held by some famous butter makers. The man who sells on contract, although his brand may become famous and thereby enrich the speculator, may never know of it; and of course will receive no benefit.

School Yard Horticulture.

[*Extract from Paper read by Elias A. Long before the Western New York Horticultural Society.*]

My earliest interest in the subject of School Yard Horticulture I think dates from about the year 1859. It was as a scholar attending a district school in Western New York. The yard of this school was ample in size, I should think fully an acre of land, and was embellished with Maple trees for shade, and with Apple trees that provided both shade and fruit.

Let it not be supposed that any large amount of sport was derived from knocking down and consuming green fruit from those trees. This is, it is true, a kind of sport which the American boy stands charged with having a great liking for, but let me take his part and say that with proper direction and instruction he is capable of better things. And that tree-adorned school yard affords the proof of this assertion.

It was a rule of the school, and rarely if ever broken, that the Apples should not be molested during their growing season, or until a certain date, when they were pronounced fit to gather. On that date the school under the charge of the teacher gathered the fruit. It was picked by the larger boys and stored in the teacher's closet under lock and key, and held for the use of the school to which it belonged.

Then as the Apples became fit for eating they were dispensed to the scholars in a most satisfactory manner. This took place every day, or every other day, as long as the supply lasted. Just previous to dismissal four boys proceeded to the Apple bin and filled four market baskets with the fruit, which was then carried through the school room, giving each scholar one or two Apples, until all were provided. They were not to be eaten until after dismissal, and when that time came you can easily imagine how these scholars enjoyed the Apple eating—a hundred and fifty scholars together munching down the fruit and chatting happily over the repast. How good they did taste!

Every scholar there learned the important lesson that ripe fruit to which one has a legitimate right is vastly better than the same fruit green, and perhaps pilfered. The further lesson was taught to maturer minds that children have reasoning powers, and that it is not difficult to control them by intelligent restraint to respect trees and fruits and flowers, if they are but rightly appealed to.

Having touched upon this practical aspect of the subject of school yard horticulture and the scholar's relation to improvements, let us turn and consider somewhat the present widely prevailing need of increased attention to our subject. I think no one here is blind to the fact that the American schoolyard as a rule is in a sad state of neglect in matters of tree and other ordinary horticultural embellishments.

That some grave difficulty is in the way of adorning school yards with trees, vines, shrubs, plants, lawn, etc., not found when we provide these in our own grounds, is not in any serious degree true. Whether the undertaking is merely that of setting out plenty of trees for shade, shelter and beauty, or the more elaborate one of introducing and caring for a considerable variety of ornamental growths, the task, considering the number of persons interested and the actual means in every district at the back of the enterprise, should not be a difficult one to handle. Properly enlisted and lead and there should be enough willing hands for the work in men, women and children, to make it light indeed. The difficulty at the root of the matter undoubtedly is found in the fact that school yard improvement too much presents a case of "what is everybody's business is nobody's business," and the school yard remains unadorned.

As to the matter of direct ways and means for best prosecuting the work, there may be some difference of opinion. I notice this subject was brought up before the meeting of the Michigan State Horticultural Society last month, and this difference of ideas as to manner of procedure was manifest. Secretary Chas. W. Garfield related the discouragements he had met in trying to interest the educational officers of the State in the embellishment of school premises. He had labored with the board of education and the president of the state teachers' association, urging that this matter be given prominence in the state institutes and conventions, but there seemed to be no fair appreciation of the matter on the part of either of these bodies to lead them to act. It was his own idea that whatever was attempted in this direction be independent of the state educational organizations.

President Lyon at the same meeting expressed the opinion that the most promising method for success in this direction lies in securing stimulating legislation. Let the legislature provide that in cases where a certain amount is expended in successful ornamentation of rural school grounds the State will add a certain amount in money to continue the embellishment; the influence is with the attempt. A committee charged with the duty of preparing a suitable memorial to the next legislature in the line of President Lyon's suggestion was chosen. Professor Tracy advanced the idea that the children themselves must be interested and kept to the work or no good will come.

To my mind no solution of the problem seems more feasible than that to be found in association work by the people of each district respectively, in a way similar to that upon which village improvement associations are so successfully conducted in many places. I am satisfied that much if not all that should be done in school yards could in most cases be better done thus by the independent concerted action of the leading families of a school district, who have the interest of the school closely at heart, than by State aid or otherwise. In a recent issue of POPULAR GARDENING AND FRUIT GROWING I had occasion to advance this same idea, and it pleased me to have the article draw out a personal letter of endorsement from the Hon. B. G. Northrop, of Clinton, Conn., who has taken such a leading and successful part in establishing village improvement associations throughout the Eastern and other States. I should suppose that in those localities where a live improvement association exists at present the work of improvement would very properly come within its province, provided there is no special society. But outside of this I would be in favor of seeing a Schoolyard Improvement Association in some form, in every school district outside of the large towns, to look after this and related school matters. Such an association should easily secure the active support of every man and woman in the district, and there would be no difficulty in getting the children interested in a way to tell well for making and keeping up the improvements from year to year.

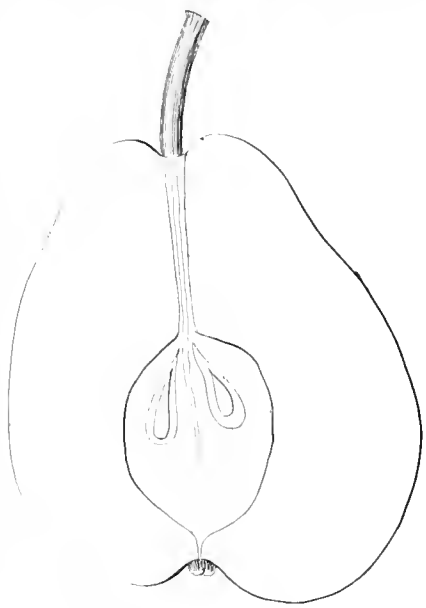
W. C. Barry followed with remarks on the same subject in which he referred to its great importance, and suggested that the teachers ought to have some knowledge of the matter and be prepared to lead the scholars in the way calculated to foster a love for the useful and beautiful in horticulture. The woods near which many schoolhouses are located are filled with many native plants now unknown that would afford knowledge and amusement if rightly used. In the neglect of this matter country people have no excuse. About the schoolhouse provide suitable shrubs, trees and flowers, placed under the charge of the teacher, who should be held responsible for them, using them to direct the children's tastes in new and higher channels than is done by mere books. This society should inaugurate such a work.

A New Pear of High Quality—The Coles.

ELI MINCH, SHILOH, N. J.

We have received from E. Eicholtz, Detroit, Kansas, the above named Pear, our cut being made from a specimen sent us last fall. It is a variety we deem of special promise, both as to the superior quality of the fruit and the health and vitality of the tree. We describe the Pear: Size, fully medium, to rather large; color, a light green, upon ripening becomes a light canary yellow. Skin, very thin, with many small patches of russet, and with very small brown specks. Form given in cut. Seeds and core imperfect, or almost seedless and coreless. The flesh is very tender, almost melting. In point of quality we know of no Pear at any season that is its superior. To our taste it excels the Seckel with more sprightly vinous flavor, and free from the sickly, sweet taste of some kinds of our best dessert Pears. The calyx is closed with segments very small whorled or contorted.

The Pear is, according to its originator, a seedling of either the Duchess or Flemish Beauty (we think it is of the later). Tree a medium to strong grower, with a half spreading top. Bark smooth with the color of wild crab apple. The tree holds



THE COLES PEAR.

it fruit tenaciously, a valuable feature in fruits set in exposed windy locations. It does not part with its foliage until frost. An excellent bearer. The season in Kansas is from September to November. Our specimens kept well until November 10th, when they were cut for description.

605. **Lime for Grapes.** A thin dressing of lime applied to the vines and well worked in around them would prove decidedly beneficial to them in most situations.—C. E. P.

629. **Cloth Cover for Cabbage Plant Raising.** Cloth suitably prepared will answer for raising Cabbage and similar plants and possesses at least one advantage over glass in the matter of ventilation, as, while glass on sunny days requires careful management to prevent the plants burning, the cloth can be used without danger. On frames it need not be removed, unless for watering, until the plants are ready to pull. For rendering cloth waterproof, the following preparation is recommended: Heat one quart of linseed oil, either raw or boiled, one ounce of pulverized sugar of lead and four ounces of pulverized resin, in an iron vessel until dissolved; thoroughly mixing while hot, apply one coat to the upper side of the cloth, which becomes impervious to moisture and transparent. Though this home-made article will make a fair substitute for glass during the early spring months, it will probably not be serviceable for more than one season, for as the sun's heat increases, the cloth is apt to mildew and turn to a dark, dirty color, under which the plants will not thrive. Where any great quantity is used, the Waterproof Fiber, for sale by leading Horticultural firms, will be found the best, as it is durable, effective and not expensive. See also answer No. 576 in this issue.—E. E. S.

Notes on Blackberries, Winter Protection, etc.

W. A. SMITH, BERRIEN COUNTY, MICH.

SOME FALLACIES.—The fallacies of the plan given in Walks and Jottings in the December issue are, first in setting out the plants "all the roots should be turned in one direction, to one side of the row." The object of this plan is doubtless to keep the roots on one side, and lay the canes on the other. It is needless to say that where plants of this kind, or almost any other, are set out, they have but few roots and not much cane. Therefore placing them on one side of the row would give no assurance that they would remain on that side. The Blackberry, on good soil, is a rampant grower, and therefore a gross feeder; and in two years, or less, the entire space between the rows, if not more than eight or nine feet apart, will be filled with roots and rootlets no matter how they are set.

Another fallacy of said article is the plowing deep on one side and hoeing shallow on the other. It would be something of a task to hoe one-half of a ten or twenty acre field. Another fallacy, worse than either of the others, is opening a trench to receive the canes in laying them down. Too much labor, and the danger in a wet season of water settling in a trench.

PLANTING SMALL FRUITS, ETC.—In 20 years' experience, and without a single failure in this time, I would, in setting out Blackberries, Raspberries, or even small trees, in large quantities, draw deep straight furrows, going once, twice, or oftener if necessary, for the same row, not less than eight feet apart for bush berries, and on a strong soil 10 feet is better, with a good team; then spread the roots well in the furrow, a little deeper than in the nursery, from 2½ to 3 feet apart, and pack well with surface soil. For small trees, especially in a heavy clay soil, I much prefer the plan to digging holes. The furrows in a heavy soil admit of soil draining, while the holes are mere water-traps, in which the trees in a wet season are apt to perish. Our plan in berry culture is to do all the work we can with horse-power, and follow with the hoe to clean up. The object of fruit growers these close times and short margins is to economize time and money in the production of crops.

LAYING DOWN FOR WINTER.—In laying down Blackberry canes for winter protection several plans may be followed. For strong, heavy canes like the Lawton, Kittatinny, etc., a little soil should be removed from the side on which to bend the cane or bush, and cover it lightly with soil, enough to keep it weighted down during the winter. With the Wilson, Early Harvest and canes of that character I prefer to plow the soil well up to the row from each side, then pursue the same course as in the other case. This saves time and labor and is entirely satisfactory here.

HEADING BACK.—The heading back I prefer doing in the spring after the canes are taken up; and in laying them down it is better and more convenient to lay them to the side to which they incline, and thereby avoid breaking the canes. The orange rust has about used up the Kittatinny and is fast taking the Lawton. The Early Harvest, a recent introduction, is considerably affected. The Wilson so far has been comparatively free from rust.

NEW VARIETIES.—Of the many new varieties of fruit and novelties boomed by the originators and their assigns, it is well to go slow. Out of 20 that are offered and sold at fancy figures to the uninitiated tyro, hardly one will stand the test as a general purpose fruit. The Early Cluster Blackberry was introduced here a few years since and proved so far a total failure. The Niagara Grape, although claimed to be perfectly hardy in this latitude, has winter-killed to the ground (in a light, sandy, gravely soil) for three consecutive winters. Every State and Territory ought to have a central experimental station, with half a dozen branches in different localities. Many fruits and cereals that are adapted to one state or locality will not be a success in others.

Strawberry Yields—An Interesting Test of Varieties.

Plants of the following list of Strawberries were set out in the spring of 1885, with three exceptions, at the New York State Experiment Station, and the report given below of their yield appeared in the recent report of the Assistant Horticulturist of the Station, and our contributor, Mr. M. H. Beckwith. Two rows of each variety were planted, the rows 50 feet long and four feet apart, and 25 plants in each row. The matted rows were from three to five feet in width and thickly filled with plants in the rows, grown in hills. The runners were cut off and not allowed to form plants.

STRAWBERRIES.	Bloomed.	First berries ripe.	Last berries ripe.	Number of berries produced by matted row.	Number of berries produced by row in hills.	Weight of berries from matted row in ounces.	Weight of berries from row in hills in ounces.	Yield of matted row in quarts.	Yield of hill row in quarts.	Av'ge No. of berries per oz. from matted row.	Average No. of berries per oz. from hill row.	No. of days in bearing.
Covill's Early	May 13	June 6	June 29	7,195	.....	587½	.....	26.8	....	13.3	....	23
Bidwell	May 13	June 13	July 7	2,090	658	193⅜	49⅛	9.6	2.4	10.2	13.4	24
Chas. Downing	May 13	June 11	July 6	4,995	772	554⅜	77¾	27.5	3.8	9.	9.9	25
Cornelia	May 20	June 18	July 13	4,680	503	573¾	79⅜	28.5	3.9	8.2	6.3	25
Daisy Miller	May 17	June 10	July 8	4,145	633	459⅜	72	22.9	3.6	9.	8.8	28
Garretson	May 16	June 7	July 5	5,380	776	617½	91⅜	30.8	4.5	8.7	8.5	28
James Vick	May 14	June 14	July 9	6,500	1,418	571⅞	133 5-6	28.5	6.6	11.3	10.5	25
Jersey Queen	May 20	June 18	July 14	3,010	410	542⅛	76	27.1	3.8	5.5	5.4	26
Jucunda	May 14	June 15	July 8	1,120	341	72½	18¼	3.6	.9	14.4	18.4	23
Jumbo	May 12	June 17	July 19	6,320	892	1,026⅜	138	51.3	6.9	6.1	6.4	32
Kentucky	May 16	June 15	July 13	5,115	1,106	575	127	28.7	6.3	8.9	8.7	28
Legal Tender	May 14	June 15	July 8	7,300	781	672½	70	33.6	3.5	10.8	11.1	23
Lennig's White	May 13	June 11	July 16	545	179	48⅞	18	2.4	.9	11.3	10.	35
Longfellow	May 16	June 14	July 14	2,580	417	316¾	63⅝	15.8	3.1	8.1	6.5	30
Manchester	May 14	June 11	July 12	7,020	890	778¾	92⅜	38.9	4.6	9.	9.6	31
Manchester (duplicate)	May 16	June 13	July 11	5,245	800	666¾	74⅝	33.3	3.7	7.8	10.8	28
May King	May 13	June 11	July 7	6,260	1,086	627½	102	31.3	5.1	9.9	10.6	26
Mt. Vernon	May 17	June 15	July 9	6,750	1,043	1,046¼	115 7-9	52.3	5.7	6.4	9.	24
Mrs. Garfield	May 12	June 15	July 9	. ...	1,004	.....	133 5-6	....	6.6	....	7.4	24
Ontario	May 16	June 8	July 9	....	364	.....	54	....	2.7	....	6.8	31
Parry	May 14	June 9	July 10	2,865	584	516⅛	918¼	25.8	4.5	5.5	6.5	31
Piper's Seedling	May 12	June 15	July 8	6,640	1,254	638⅛	109	31.9	5.4	10.	11.5	23
Primo	May 14	June 15	July 9	6,015	1,107	756⅞	145	37.8	7.2	7.9	7.5	24
Prince of Berries	May 20	June 15	July 9	4,495	480	585	55½	29.2	2.7	7.7	8.8	24
Sharpless	May 16	June 14	July 2	2,885	455	533¾	75⅜	26.6	3.7	5.4	6.	18
Wilson	May 12	June 7	July 1	7,635	1,803	474⅜	130	23 7	6.5	16.1	13.9	24
Woodruff No. 1	May 12	June 14	July 13	7,920	1,421	846¼	176	42.3	8.8	9.4	8.	29

The yields of the rows grown in hills are computed for 25 plants or 50 feet of row; the yields from the matted rows are computed for the same length of row. The fruit picked from ten feet in length of the matted row was used in computing the yield. The average number of berries per ounce for each row, also the yields in quarts as computed, allowing 20 ounces of fruit per quart, together with other data, are given in the table.

It appears that Covill's Early was the earliest in this list, and Cornelia and Jersey Queen the latest to ripen.

The Lennig's White and Jumbo remained in bearing the greatest and the Sharpless the least number of days.

The greatest number of berries was obtained from the matted row of the Mt. Vernon, the least from Lennig's White.

The hill row producing the greatest number of berries was the Wilson, the least Lennig's White; Woodruff No. 1 the greatest weight of fruit, and Lennig's White the least weight.

The average number of berries per ounce from the matted rows was 9.2, from hill rows 8.1.

Average yield per matted row 22 quarts, per hill row 7.3 quarts.

Covill's Early.—Plant dwarfish, vigorous; leaves dark glaucous green; fruit medium size, somewhat resembles the Wilson in form, dull reddish color; seeds light yellow, very prominent, giving the berry a rather uninviting appearance: flesh very firm, bright scarlet color; flavor only fair; fruit stalks short; season early. Slightly blighted.

The Ontario was planted October 1, 1886. The plant and fruit resembles the Sharpless; the fruit is perhaps a little more uniform in shape.

The fruit of the James Vick Strawberry, like the Wilson, is not fully ripe when it first colors. The fruit should be allowed to become fully ripened before picking, and the flavor will be delicious.

Siberian Crab for Stocks.

F. K. PHŒNIX, DELAVAN, WIS.

Are not the Siberian Crab trees, including the cultivated hybrids and thrifty iron clad seedlings, useful more especially in severe climates for nursery, stem and orchard top working the choice but far less hardy dessert Apples on?

This is a vast, new, and I believe for us in the cold North most promising field. Selected rather slender growers as Golden Russet, Romanstem, Jonathan and Rome Beauty will doubtless be less liable to overgrow the slower growing Crab stocks. Some sorts of cultivated Apples will do better than others on Siberian stocks. But if I had more trees of any sort of Siberian than I needed for fruit, I would certainly top graft them this coming spring.

Of course your readers all know how to bud or graft successfully. If not, they should hasten to learn this spring or summer without fail. For cleft grafting in the cold north choose limbs not over an inch in diameter. Whip or splice grafting small limbs the size of cion or a little larger makes a perfect union the same season.

As to best varieties to be grafted on Siberian trees in the present dearth of knowledge, I would graft besides those above named Chenango, Strawberry, Mother, Stark, Wealthy, Famense, Willowtwig and any others I wanted. Such as Swaar, Rhode Island Greening, Fall Pippin might overgrow and be less sightly or durable, but I think are worthy of trial. Experiments with Siberian stocks are now in order.

Hints on Peach Culture.

J. LUTHER BOWERS, HERNDON, VA.

The writer's experience after 25 years of successful culture has been: To get fine large Peaches the soil should be cultivated every year and kept free from weeds. If old neglected trees are cut back so as to form new sprouts, and these each succeeding year cut back one-half to two-thirds, finer fruit will be obtained.

The best time to prune here is as the leaves begin to fall. By cutting away surplus wood at this time the vital powers of the tree are better prepared to push forward a vigorous growth in the spring. If pruning

has not been done before, then the warm days of February (or March farther north) are next best.

Let young trees be started with low heads, the lower limbs not over two feet from the ground. Every fall before freezing weather I scrape away from around the base of the tree weeds, grass, and soil and dig out borers and leave these parts exposed until spring. Just before blooming time I put from one quart to one-half gallon of unleached ashes around the base of each tree. I have never had the yellows to attack a tree so treated.

A wash made of 5 lbs. of concentrated lye, 1 peck of stone lime and 5 lbs. of lard makes a wash that will make the bark of a Peach tree almost as smooth as glass. Dissolve the lye in 5 gallons of boiling water; slack the lime in 5 gallons of boiling water, and heat the lard to a boiling point. While all the parts are hot, mix in a barrel or large tub, adding ten gallons more boiling water. When cool apply to the trunk and large limbs. An old broom is the best thing to use. Do not apply after the tree is in leaf.

A Fine Michigan Vineyard.

F. E. SKEELS, GRAND RAPIDS, MICH.

It is probable that nowhere this side of California could be duplicated the sight we saw here at the vineyards of H. H. Hayes in Ottawa County, this State, on the occasion of the last September meeting of the Grand River Horticultural Society at this place. The vines were weighted down with massive clusters of fruit, very few of them weighing less than half a pound each, and eight bunches shown weighed together nine pounds; a six inch piece cut from one vine held five pounds of Grapes. The vineyard contains about ten acres of bearing vines, situated upon a high hill of heavy clay loam, and is all of one variety—the Niagara. As the club reassembled after its trip to the vineyard, Mr. Hayes told how these things were.

About sixteen years ago Mr. Hayes' family had settled here, and for some years had struggled along on short rations, raising common farm products, until in 1884 he was offered $100 per acre for his farm, the would-be purchaser dropping the remark that he wanted it for a Grape farm. But Mr. H. thought it worth as much to himself as anybody, and undertook the planting and care of a vineyard himself, with the success we saw. Mr. Hayes has never neglected the care of his vineyard a moment since planting it out, and has devoted much time to the study of the habits of the vine, and attributes his success largely to points learned at the horticultural meetings.

One point which he emphasized strongly was that he never allowed a crust to form on the surface after a light or heavy shower, always keeping the soil well worked and mellow. No fertilizers were applied the first year after planting, but each succeeding spring he applies unleached wood ashes and raw bone dust, at the rate of a peck of ashes and a pound of bone dust for every vine; the ashes and bone dust being thoroughly mixed are applied broadcast all over the vineyard, and immediately after the sower comes the harrow working the fertilizers beneath the surface.

Just before winter sets in in earnest he applies about a bushel of well rotted compost to each vine as a mulch and as a protection from too severe frost. With this treatment his vines had never sustained any injury from winter. His trellis consists of two wires, and each vine sends out two laterals from each side along the wires, the laterals being nipped off at the eighth bud. Just after forming fruit thinning is commenced, finishing up in June by removing every loose, misshaped or misplaced cluster and arranging the remainder so that they will have room to grow and be harvested without damage. No shoots are allowed from either the root or the main vine, his aim being to throw all growth into leaves not needed by the fruit.

M. B. Faxon on Growing Garden Vegetables.

On the supposition that a garden of one acre has been prepared and is ready for planting, first lay it off in rows, uniformly if possible, and next assign to each intended crop the rows or portions of rows that will be suitable for it to occupy. Let it be assumed that the piece is oblong in shape, one hundred feet wide and four hundred and thirty-six feet long; this to be so divided into rows as to give one hundred and nine rows each one hundred feet long; each row being understood to include a surface of one foot wide, on which would be placed the seeds or plants; there would then be left an interval of three feet between each planted strip and the next one, affording ample space for horse cultivation.

ASPARAGUS.—The roots should be planted at intervals of twelve inches in the row, the crowns from four to six inches below the surface. The spring is the preferable time. Two-year-old roots should be used; and it is not desirable to cut Asparagus for the table until the second season from the planting, but afterwards it may be cut annually. The variety known as Conover's Colossal is recommended. Three rows will not be too much, and will take about 400 plants.

THE BEET.—It requires a deep, sandy loam; should be sown as early as the ground is in good working order; and the plants, as soon as well up, should be thinned to eight or ten inches apart for the early crop. Sowing for the winter crop should be about July 1 or a little earlier. Less thinning will be proper than for the early crop, as the warmer weather favors the growth of the plants enough to admit of their standing closer. Four to five inches apart will be enough. The Early Bastian and Dewing's Early Turnip are standards for both early and late crops, though other good kinds are in common use. Beet tops used as greens are by many preferred to Dandelion or Spinach; the Swiss Chard or Silver Beet is grown entirely for this purpose. It sends out fresh sprouts continually during the season, no matter how often cut off. One row should be planted with Beets for supply of greens and early roots, and another with Dewing's for winter use.

CABBAGE.—One had better buy the few plants he will require for the early crop than attempt to raise them from seed, unless he has hot-beds or chooses to raise the plants for the pleasure of growing them. They should be set in the ground about the 20th of April. Winter Cabbages can be raised from seed sown in open ground the 10th and 20th of June. Half a row of the kind will suffice. Of the late sorts we may plant freely, as there will be plenty of room to put them in after the Pea crop has been gathered and cleared away.

THE CAULIFLOWER.—This crop can be grown quite successfully by some amateurs, though it is generally left to the experienced market gardeners. Strong, stocky plants are needed. The culture is the same as that of the Cabbage. At least a row will be needed, and this will take seventy-five plants. One can raise his own plants if he chooses, or at the proper time can supply himself by purchasing. Early Snowball and Dwarf Erfurt are good kinds.

CELERY.—This is also a "market gardeners' crop," though not difficult of cultivation. The plants are obtained by growing or purchasing them in the same way as Cabbage or Cauliflower plants. They are to be set in the open ground between the 15th of June and the 1st of July. The crimson Celeries have one advantage over the white kinds, that in the spring, when the latter have become soft and lost their aroma, the former are as good as when gathered in the fall. One hundred plants will occupy one of the rows we are speaking of, as the plants should be about twelve inches apart; it would be well enough to plant two rows, as Celery usually follows some early crop.

THE CARROT.—To grow Carrots to perfection there is needed a good, light and well enriched sandy loam. The earliest kind is the French Forcing, a little, round Carrot, of delicious flavor. The early Scarlet Horn is next in order, a very fine-grained and agreeably flavored kind. A good strain of Danver's Half Long is best for general use. One-half row will be sufficient for flavoring the winter soups and stews.

LETTUCE requires to be grown in a moist soil and in cool weather; for this reason the best is obtained only in the spring or early summer. For New England, the black seeded Tennis Ball when solid heads are required, and the Boston Fine Curled for a curled Lettuce, are both desirable varieties. One half-row of Lettuce will be sufficient.

ONIONS FOR SEED.—Plant seed in rows as soon as the ground is workable in the spring, and when well up thin to four inches apart. They must have clean, thorough and constant cultivation during the growing season. There are white, red and yellow Onions; the yellows are favorites in this section. If not strictly fashionable, they are at least good, and it will be well to have three or four rows of them.

ONIONS FROM SETS.—Sets produce Onions much earlier than could be grown from seed. They should be set out about the middle of April. The white ones are by far the best. Half a row of sets will be enough, making the row a foot wide and setting the bulbs four inches apart, thus having a row of three sets wide. Two quarts of sets will be needed.

THE PARSNIP.—The seed should be planted very early, and when well up thinned to six inches apart. The quality of the roots is improved by frost, and a portion of the crop may be left in the ground, to be gathered in the spring or earlier, as occasion favors. The long, smooth white is a favorite kind. Two rows will supply a good yield, for which one-fourth pound of seed is required.

PEAS.—This vegetable, eaten by every one, is almost always placed first upon the list for the family garden, and is so much liked that there is not much risk of providing too abundantly. To have a good succession of Peas for the table from the 17th of June until the middle of July or first of August, or later even than this, it is necessary to make several plantings and to use quite a number of varieties; early, medium and late. If the Peas planted are such as grow over two feet in height they must be bushed, otherwise they will fall over and mildew and the crop will be less than if they are properly staked up, and the garden will not look as neat and tidy as it should. For first early, the early Dan O'Rourke and First-and-Best are good as any. For second early, Bliss's American Wonder, McLean's Advancer and Yorkshire Hero. For the general crop, Champion of England, Carter's Stratagem, and Bliss's Ever-bearing The green, wrinkled kinds are more tender than the white ones and should not be planted till later. It is better to plant too many than too few. It will be well to plant six rows, say as follows: As soon as the ground can be worked sow a row of Early Dan O'Rourke. These will be ready for the table June 17, and will supply us till the 25th or 26th. About April 20, or a little later than the above planting, put in a row of First-and-Best, which can be picked be-

tween June 25 and July 1 or 2; then Bliss's American Wonder (if it has been planted about the 25th of April) will be ready for picking; and next in order will come McLean's Little Gem, McLean's Advancer, Yorkshire Hero, and Champion of England.

THE RADISH.—This will thrive in any good soil, but to be crisp and tender must be grown quickly. If a continuous supply is wanted, make sowings every ten days or two weeks. French Breakfast and Early Long Scarlet are both excellent. Half a row, planted at intervals, will be sufficient.

THE TURNIP.—Turnips are propagated from seed and they do not bear transplanting. The chief difficulty with them is their coming up so thickly together, which makes a great deal of trouble in thinning out. Early crops are sown as early as possible in the spring; Swede Turnips later, about June 1; while the purple-top varieties may be planted either early or late; and from sowings as late as Aug. 15 good crops may be secured. The Sweet German and also Carter's Imperial Swede are good for winter use. The first-named is commonly known as the Cape Turnip and is raised extensively on Cape Cod; its flesh is white; that of the Imperial Swede is yellow. At least three rows of Turnips of the different varieties should be planted. From the 1st to the 15th of August many spaces of our ground will have been cleared by the gathering of early vegetables, and may be used to good purpose with little labor by sowing with the Purple Top Turnip.—Before Massachusetts Horticultural Society.

Notes on the February Number.

WM. F. BASSETT, HAMMONTON, N. J.

WORK FOR WINTER, P. 97.—In pruning Blackberry canes, all those swellings which are found in the Wilson and Wilson Jr. should be cut off and the waste burned. These swellings are the work of a borer which comes out when the plants are in bloom and deposits its eggs on the new canes, and this is the only effectual method of destroying them. All the fruit which sets above these ripens imperfectly; nothing is lost by cutting below them.

RHUBARB AT THE SOUTH, P. 97.—Too high summer temperature causes the roots to decay and become hollow, and it requires dividing and replanting once in two years. We succeed here in Southern New Jersey by renewing, thus making the soil very rich. A neighbor gets a magnificent growth of Linnæus Rhubarb in low land which receives the surface drainage of all the adjacent land and streets for a mile or more, to such an extent that water often stands a foot in depth for several days. Try planting it on a sharp northern slope or on the north side of a high fence or building and mulch it heavily with swamp moss.

PROPAGATION OF RED RASPBERRY PLANTS, P. 97.—I once manured a newly planted patch of Cuthbert with horse manure from a stable where cedar shingle sawings had been very freely used for bedding, and wherever the roots struck a mass of this material buds were formed in great abundance. Probably very coarse strawy manure would have the same effect and produce plenty of suckers the following season.

VARIETIES OF RASPBERRY, P. 102.—When Hansell succeeds I like it better than Turner, even for family use. It is earlier and larger, and I cannot see that it is inferior in quality. Hopkins is more than slightly smaller than Gregg, but is far better in quality. Ohio, as grown here, is nearly all hard seeds, and I cannot help suspecting that this is what causes it to weigh so much more than the others when evaporated.

TOBACCO FUMIGATION, P. 105.—The statement that Tobacco smoke will not injure the tenderest plant when cool hardly accords with my experience. I always expect the foliage of Smilax and some other plants to get browned when I fumigate, even if at considerable distance from the fumigator.

GARDEN WALKS, P. 106.—Walks, whether in the garden or elsewhere, are much nicer in wet weather if made of quite sandy loam, and in dry weather it is as good as clay loam.

FUCHSIAS, P. 106.—As these must be kept growing rapidly to bloom well, old plants are much better if cut back very severely in early spring, then give them pots one or two sizes larger, leaving a little space in the new pot at the top and around the ball of earth, and apply one-half to two ounces of dry hen manure (according to size of plants) and cover with a little soil or swamp moss.

STRAWBERRIES FOR PROFIT, P. 112.—Crescent can be made to yield a very heavy crop and nearly all large berries by the following plan: Plant in rows three or three and one-half feet apart, and plants two to three feet in the row, of course planting every third row of some staminate, in land made very rich. Allow enough of the first runners to grow to fill in plants in the rows to 6 inches apart, placing them by hand, after which *cut all runners as fast as they appear.* This may seem like a tedious job, but I think the extra labor will be offset by the reduced labor in picking the fruit the next season. Probably those who ship sandy fruit do not realize that the constant jarring and thumping together in transit imbeds the dirt and sand into the berries so that it cannot be rinsed off as when brought in from the fields for home use. Mr. Thompson's list of varieties may be all right for his locality, but Mt. Vernon is worthless here.

How do you Cut your Asparagus?

There have been improvements from time to time in the making of Asparagus knives, until the desirable form figured herewith has been reached. In one of the earlier forms the blade, which was strong and fixed in a handle, was blunt at the sides, but with a sharp end like a chisel. Another had a blade slightly hooked and with saw-shaped teeth at the end. The better form, which is here illustrated, is serrated both at the end and one side, and this one is destined to come into wide use. This improved Asparagus knife is kept for sale by a number of our leading dealers in gardening implements.

An Improved Asparagus Knife.

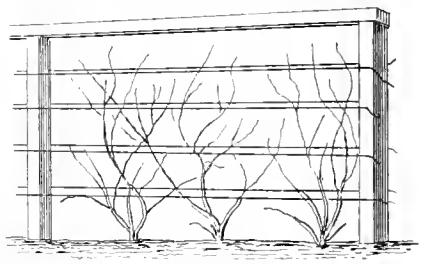
Blackberries in the Garden.

A chief objection to the culture of Blackberries for home use is the spreading habit of the thorny canes, which, without mercy, lay hold of those who happen to brush against them. To overcome this objection to a fruit most desirable in other respects, a correspondent, W. G. Raines, Litchfield Co., Conn., employs a trellis for confining the growth, which we have thought well enough of to have had engraved. Our correspondent refers to the trellis as follows:

"Along my Blackberry rows, which by this method I can place as close as four feet from each other, with the plants about two and one-half feet in the row, I set posts at eight feet apart. If the posts vary in thickness I set one side to line, and then nail a nine inch board up and down any posts that are less than nine inches through, bringing the front of such boards to the line. If it is desired to give the trellis a finished appearance as well as to add to its stability a line of inch boards, 16 feet long and 6 inches wide, or scantling of the same length, are nailed along the top of the posts.

For retaining the berry bushes, either slats or wires may be used, nailing four of these horizontally from post to post on each side. This brings the slats or wires that are opposite each other nine inches apart, and it is in these spaces that the canes are trained.

Why I like this trellise is that I can by its use grow Blackberries in my garden with



Blackberry Trellis in Garden.

scarcely more inconvenience than Grape vines. I can till closely to them, keeping down all weeds, and twice the number of plants can easily be grown to the same area, as without its use.

Is Grape Growing Overdone? One-Cent-a-Pound Grapes.

At a recent meeting of the Grape-growers of the adjoining county of Chautauqua the question, "If we raise better Grapes than other sections can the business be overdone? met with the following consideration:

Mr. Ryckman.—Certainly not. In Philadelphia our fruit side by side with that of other sections sold for one cent a pound more. We shall make money even if we get prices lower than at present. More money can be made raising Grapes at a cent a pound than in any other kind of farming. An acre of good bearing vineyard ought to yield three tons, which at one cent per pound are worth $60. A hundred acres would bear $6,000 worth of fruit. The entire annual outlay would not exceed $2,500. This leaves a profit of $3,500.

Mr. Becker.—A vineyardist cannot raise Grapes at one cent per pound and live. I read only the other day that Grapes had sold for one cent per pound at Hammondsport and the statement was made that such prices meant ruin to growers in that section.

Mr. Ryckman.—I have given you the facts and you can figure it up for yourselves. A man to make money in Grapes at one cent per pound must grow Grapes and nothing else. A farmer has no business to grow Grapes. His seed time, haying and harvesting, each interfere with his vineyards. He will neglect his vines when they need care, and he cannot make money in Grapes at much less than a cent per pound. I know this by experience; whatever happens my Grape-vines are going to be cared for.

Mr. Watson.—I do not wish to raise cent a pound Grapes. A hundred acre vineyard would involve a vast outlay for land, vines, posts, wire and labor, on all of which interest should be allowed. I don't believe a hundred acres would average three tons per acre each year. It may be done in a small, favorable spot, but not on a large scale. Twenty-five dollars per acre is not enough for expenses. The picking and packing of a ton costs $4 to $12 per acre. The remaining $13 is not enough for pruning, tying, plowing, cultivating, etc. All these things considered I conclude that Grapes cannot be raised at a cent per pound. I agree in the main with Mr. Ryckman. I don't believe in the plan of letting weeds grow late in the season to hold the snow during winter. It may do in some seasons, but often we have a long late drought during which the weeds injure both fruit and vines. I prefer to plant my vines nine feet apart each way.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

EVAPORATED RASPBERRIES. In answer to several enquiries as to why Red Raspberries sell so much higher than black, we would say, that it takes about ⅛ more fresh fruit to make a pound of dried fruit. The best Red Raspberry we have tried for drying is the Cuthbert. Of course twenty pounds of blacks are dried to one pound of reds, and too blacks grow and yield on soil and in localities where the reds are not productive. Now we would say in answer to one enquirer that our harvested Raspberries dried sold for about 20 per cent less than the hand picked, but considering that the cost of harvesting is not over one-fourth as much, the difference in profits is in favor of the former.

STRAWBERRIES IN MATTED HILLS. These are gown by setting strong plants 3 feet apart each way and keeping them thoroughly cultivated both ways. As they begin to throw out runners the cultivator must be kept going quite often *both* ways so as to prevent the young plants from setting far away from the old plants. By fall the young plants setting around near the original plant form a compact, matted hill 12 to 18 inches square. These matted hill beds yield as much fruit in bulk as matted rows, and of larger and more uniform size, while the work of finger picking is not near as much. Try a plot the coming season and see if you don't like it. The following season they will be allowed to run one way and form matted rows.

COVERING STRAWBERRIES. If not done before it should be at once if growing on land that is liable to heave. It's the early spring thawing and freezing that does the great damage, and mulching prevents this.

GRAPES UNDER GLASS. How many old greenhouses there are that might have two to four of the more tender and delicious Grapes growing under them, and yet not interfere in the least with growing or forcing plants in the beds.

BOILED CIDER. A Chicago commission merchant informed us that he was getting quite a sale for boiled cider, say boiled down 75 per cent. We trust some such trade may be started up as it would be a great help to evaporating fruits in using up skins, cores and trimmings by pressing them into cider and boiling this down. There ought to be a good trade worked up, as all favor boiled cider for making sauce, vinegar, etc.

PEACH GROWING is made more successful by Mr. Rutter of Pennsylvania by throwing up against each tree half a peck of unslacked lime, say twice a year, and covering this over with a little earth. Thus covered it slacks slowly and scalds out the grub. A certain writer says he tried to kill a few Peach trees by shoveling up against the bodies quick lime, and when, during a rain, he saw the trees enveloped in smoke for half an hour he thought they were gone sure, but it proved a great benefit to the trees. We know of no better or safer way to keep grubs out of Peach trees than to dig earth away for two inches below surface and wind tree loosely with tar paper, and draw earth up against this. Of course the tarred side of the paper should be out and not in or against the bark of the tree.

FORCING CUCUMBERS, MELONS, ETC. Be sure to put a few inverted sods in the hotbed or greenhouse and plant on these seed, and when sods are planted outdoors cover them over with small square frames covered with glass or cloth.

LARGE VERSUS SMALL TREES. No greater mistake is made by a large number than ordering the largest or "bearing" size trees and vines. It's a well known fact that no nurseryman can take up large trees and save or retain a large proportion of the roots, especially of the finer roots or fibers, as these grow at the extremities of the roots and are generally *cut off* in digging, while with small trees the roots are close together and the libers mostly gnarled. Thirty years ago we set out an orchard of two, three and four year trees. Within five years time the youngest trees were as large as the others, and much fairer and healthier every way, and we know that none could have taken more pains to dig and set them than did we.

CUTTING BACK BLACKBERRIES AND RASPBERRIES should be attended to this month, say fully one-half of the side branches. Cut worms are cut back and killed out largely by early spring plowing.

SALSIFY OR VEGETABLE OYSTER should be grown in every garden. The same rules for growing good Parsnips answer for this delicious vegetable. The seed should be sown as early in the spring as soil will do to work. The soil cannot be made too rich. Plant in rows 18 inches apart and two to three seed to the inch, and these thinned when growing nicely to 3 inches apart. Like Parsnips they can be left in the ground all winter.

HASTENING BEETS AND ONIONS. This may be done by soaking seeds in water for a day or two; then pour off water and mix in dry sand, rubbing well together and then sowing in hot-beds thickly, and rows close together in the hot-bed, and as soon as settled weather comes in the spring transplant outdoors. Many contend that the work of transplanting is not so much as weeding and thinning out where sowed in the field, and also the larger percentage of seed that is thus wasted, and besides at least three to four weeks is gained by starting them thus early, and too by ground being freshly plowed and prepared when transplanted the weeds are easily kept down and the Onions and Beets get a nice start of such.

GROWING BERRIES SOUTH.

Since our former article relative to growing trees south, we have received numerous inquiries as to growing small fruits, marketing, etc. In answer to these we would say, first, that until railroad and express companies get to be more reasonable in their charges and more reliable as to quick transportation, we cannot conscientiously recommend any person to go into the business of growing small fruits to ship north for profit.

As a specimen, from our grounds in High Point, N. C., we have to pay $3.50 to $4.00 per 100 lbs. to Philadelphia and New York, and worse than this we have had crates of berries setting on the platform, all billed for northern points, and the express messenger refusing to take them on, saying that they could not take any more. As to Peaches, we have known parties there that have bought the best Peaches for 50 cents per bushel and ship them north, when they sold from $2.50 to $3.00, and yet when returns came back they had not a cent of profit. The only chance for Peach growers South at present is to evaporate them, which we propose to do from our 3500 trees.

As to growing small fruits we advise fertilizing the soil with cow-yard manure or bone dust right under the roots; that is, for Strawberries plow furrows 3½ to 4 feet apart and scatter in bottom of them above, and then cover over with soil, and on this set the plants. For Raspberries mark out one way 3½ to 4 feet with a marker and plough out furrows the other way, and in each place where the mark crosses the furrow, scatter the manure or bone dust and set the plants. This is much better than scattering the manure broad cast, for two important reasons. The strong main wood will be made right at the "hill" where the manure is dropped, and suckers will not sprout up much outside of this.

The Turner and Cuthbert are best red, and Tyler and Ohio best black sorts we saw growing there. Of Strawberries we recommend those sorts that make runners freely, like Crescent, Hoffman, Crystal City and May King. So far as we observed the larger fair sorts of the North, like Sharpless, Chas. Downing, etc., did not succeed well South. For the South we would recommend hill culture for Raspberries so that they can be kept well worked out both ways.

INTRODUCING A NEW GRAPE.

TORONTO, Canada.

DEAR SIR:—I have a seedling Grape from either Merrimac, Wilder or Salem. Small black fruit, medium sized; close, heavy bunch; very early, ripens end of August; thin skin, occasionally when dead ripe skin cracks, fruit then very sweet; yields a dark, ruby-colored juice. Makes a rich, high-colored, pretty wine or jelly. Vine perfectly hardy, free from mildew, spot or blight; rather large leaf, productive and easy to propagate. This vine, although allowed to grow almost wild amidst surrounding shrubs and in rough grass, yearly produces an abundant crop of fruit. The women folks prefer it to any other varieties, on account of the superior wine and jelly it makes. As a table Grape it is worthless, but for wine or jelly I think it is worth propagating. I should like your opinion of my seedling. W. J. M.

This is a sample of many letters that I receive regarding new Grapes, small fruits, etc. To be candid with our friend, we reply that we do not think it will pay him to introduce his Grape. This introducing new fruit in the way it is being done is being overdone, and not one introducer in fifty ever realizes enough to pay expenses. The proper course to take is to send a vine to competent judges like Samuel Miller, of Mo., Campbell of Ohio, Garfield of Mich., Meehan of Pa., and others, and if a large share of these report favorably you may stand one chance in ten of making money.

R. I. We do not advise drawing out muck from the swamp directly on the ground where it is to be applied. It should be hauled out in heaps with lime, coal ashes, common soil or manure mixed with it, and the pile lay a year at least before use.

Thos. W. W. It will be safe to plant out small fruits on land that will grow good Corn and Potatoes, near a market where Strawberries and other berries do not get below 5 to 6 cents per quart. If you can get 8 to 10 cents you can go ahead with assurances of success.

R. T. has three old Pear trees that have about run out, and asks if they can be made to renew their age. Try the plan of digging a shallow trench, say one foot deep, six to eight feet away from the body of the tree, and throwing into this a liberal supply of sods, leaf mold, ashes, lime and manure and covering with earth, and then cut away all dead limbs and give the body and limbs a good coat of whitewash. We have seen old Peach trees renewed beyond belief by the process. If your orchard of sixteen years is so luxuriant and does not yield fruit, and the branches are running together, cut out every other tree and trim trees so as to give the sun a chance to the soil and fruit or blossoms.

E. B. J. Yes, you can grow the hardy sorts of Blackberries, like Snyder, Western Triumph and Taylor successfully, even if they will not stand your winter in Minnesota exposed. This is done by simply digging under one side of the roots and bending them over and covering with earth just before winter sets in.

E. W. Oneida Co., N. Y. You will find Hall's Japan Honeysuckle the best running vine for screens, as it holds its leaves all winter and does not drop them till the new leaves take their place. It is delightfully fragrant and very profuse in blossoming, every alternate flower being white and yellow. It is also very hardy and a rampant grower.

J. F. asks if the Pear will succeed grafted on Apple stock. We have tried it repeatedly but without success, and to the same correspondent we would say that the party in Wisconsin who is so successful in growing Blackberries by high manuring and laying down in the winter, grows only the dwarf kinds like Snyder and Stone's Hardy. High manuring of such kinds as the Kittatinny will destroy them for fruitfulness.

Double-flowering Forms of the Oxalis.

Whether any Oxalis can ever stand higher in the estimation of florists and window gardeners than the wonderfully handsome, easily grown and profuse-blooming sorts, O. rosea (or floribunda of some), O. lutea or O. rosea alba, may well be questioned. But at any rate it will interest many flower lovers to know that some double-flowering forms of this favorite class are attracting notice in England and elsewhere in Europe.

Of one such double flowering kind, Oxalis imbricata, the annexed figure is a good representation. This cut first appeared in the Gardener's Chronicle and was re-engraved for our columns. It shows the flowers as well as the other parts of the plant a little under the average size. Being of a pleasing rose color, and perfectly double, they should prove very attractive little flowers,—indeed we are sure that those of our readers who have met with the usual abundant success with the single rose-colored sort referred to would have a great desire to try their hands on this comparatively new comer.

This new species was introduced to Kew, England, from the Cape of Good Hope, through the botanic gardens in Port Elizabeth. The plants and tubers were originally gathered about 30 miles from the Port. The color is a deep rose, and in form the flowers are as double as the most double of Chinese Primroses. Another double Oxalis that has been known but for a few years, and was supposed for a time to be the only one in existence, is Oxalis cernua fl. pl. In this the flowers are umbellate on an erect scape 6 inches high, lemon-yellow in color, and as double as those here figured.

Still another double Oxalis was brought to notice in England in 1883, under the head of "A Wild Double Oxalis from Natal," and named O. semiloba fl. pl. Of this Mr. N. E. Brown of the Kew Herbarium has recently said: "If the plant were introduced I think it would prove of even greater horticultural value than the double form of O. imbricata, as the peduncle is several-flowered in O. semiloba, whilst in O. imbricata it is but one-flowered. The double form of O. cernua is exceedingly pretty, but I have only seen it once, several years ago, in the collection of Mr. Wilson Saunders, with whom Oxalises were favorites."

Cannas as Flowering Plants.

ARTHUR H. FEWKES, MASS.

As flowering plants there are few who seem aware of the possibilities of the Cannas, although their beautiful foliage has long since placed them in the front rank of subjects suitable for the sub-tropical garden. To those not well acquainted with their merits as bloomers it needs only to be said that they are of the easiest cultivation, stately in growth, and producing a succession of flowers somewhat resembling and vieing in beauty with the best Gladioluses.

A BIT OF HISTORY. The old Canna Indica, or Indian Shot, a native of the East and West Indies, was introduced and cultivated as a stove plant in the time of Gerard, about 1596. This, with its variety lutea, were the only Cannas cultivated for more than a hundred years after, and as hot-house plants at that until 1846, when Th. Annee, the French Consul at Valparaiso, South America, brought with him to Paris a considerable collection. Part of these were first planted in the open ground with entire success, and the next year the entire collection.

In 1848 Annee began hybridizing Cannas and obtained the variety called Anneei. But it was not until 1855, when the public squares of Paris were created, that the value of Cannas as garden plants was fully appreciated. Since that time they have been much improved, not only at the hands of Annee, but by other horticulturists.

The earlier efforts at improvement seem

A DOUBLE-FLOWERING OXALIS.—OXALIS IMBRICATA.

to have been largely directed toward leaf development, but of late attention has been given to the flowers, resulting in some very remarkable varieties, ranging from bright yellow through orange, and the brightest scarlet to deep crimson.

It is true the hybridists have not yet succeeded in obtaining fine flowers in connection with the broad, dark, purple leaves of some of the older varieties, but there is reason to expect that at no distant date we may see as fine foliage with the flowering varieties as with the others. The variety M. Ferrand, with its purple leaves and crimson scarlet flowers, shows quite an advance, and Ehemanni, with its broad Musa-like leaves, is not equaled for flowers among the light leaved kinds. The last-named variety, of which too much can hardly be said in praise, made its appearance in 1883. When well grown it attains the height of ten feet, with long spikes of large, drooping flowers, 4½ inches in length, with petals 1¼ inches in width, of a rich magenta crimson color. The Bauana-like leaves are not much liable to be injured by the wind.

OTHER VARIETIES. Of other varieties of special value for their flowers, the following may be named:

Noutoni, one of the most valuable for flowering purposes, is a still newer variety of C. Iridiflora (parent of Ehemanni), growing about seven or eight feet high, with dark, glaucous green leaves, narrower and more pointed than those of Ehemanni. The more erect, deep crimson flowers, average in length about 3½ inches, and spread about 3 inches, with petals an inch in width.

Vesurius, another new variety, somewhat resembles the last in habit, but of lower growth and with bright crimson scarlet flowers. Although not quite so free flowering as some of the other varieties, its brilliant color is very effective.

Adolph Weick is by far the most valuable of the red flowered Cannas, excelling all others in freedom of bloom and general usefulness. Though not a new variety its great value has been but recently appreciated. It does not content itself with throwing up simple spikes of bloom, but each one branches into four or five side branches, which terminate in very full clusters of flowers of large size and great beauty. When well grown it will average about five feet in height, beginning to flower very early in the season. In pots in the greenhouse it will flower when about two feet high, and if planted in a rich bed in June they will flower all through the summer until cut down by the frost.

Pelletiere, a new variety of last season is almost identical with the preceding, except in the color of the flowers, which is a bright orange crimson, with dark crimson sepals.

Premices de Nice. Among yellows there is nothing better than this old variety, which was introduced about twenty years ago. The flowers are large, very freely produced and of a clear, canary yellow color. It reaches the height of about six feet, with pointed, light glaucous green leaves. The bright color and freedom with which the flowers are produced make this one of the most useful varieties grown.

Abondance, a yellow flowered variety of more recent introduction, is very useful in its way. It is of dwarf growth, averaging about four feet in height, with light green leaves, and a remarkably free bloomer. The flowers are of good size and thickly set on the spike. In color they are deep yellow, thickly spotted with orange.

Safrano, a variety introduced at the same time as the preceding, has proved to be one of the very finest. It is of medium height with long, pointed light green leaves, and produces its large bright orange colored flowers in great abundance. It begins flowering when very small and continues throughout the season.

The foregoing are the most valuable for general growing, and when they become better known no garden will be complete without a fair representation of these plants. In parks or other large grounds there can be nothing more effective than well arranged plantations of these varieties, they showing to the best advantage when massed in large beds of one color or variety.

CULTIVATION. The cultivation of Cannas is very simple; and while they will grow most anywhere, to obtain the best results the soil should be removed from the beds to the depth of two and one-half feet or more and filled in with a compost of good loam and stable manure in about equal parts. The roots should be planted in this as soon as all danger from frost is past and liberally watered through the summer. Light waterings will do but little good; the bed should be well drenched and should not be allowed to become dry at any time through the season. Where one has the advantage of a greenhouse it is best to have them well established in six-inch pots by planting-out time. By this means an immediate effect is produced and they are all sure to grow, whereas if dry roots are used it will be some time before they will appear above ground, and some may never start.

In the fall after the frost has destroyed the beauty of the plants they should be cut down nearly to the ground, the roots lifted and stored away for the winter. They may be either placed in the cellar, packed in boxes of loam, or what is better, where practicable, in the greenhouse beneath the stagings, selecting a place where there will be but little water drip upon them. Water should not be entirely withheld from them through the winter, but enough should be given to keep them from shriveling. This is especially applicable to the varieties above described, as they all have rather long, thin

root-stocks, which are more liable to shrivel than those which are shorter and thicker.

Notes on Spring Flowering Bulbs and Hellebore.

E. ORPET, PASSAIC CO., N. J.

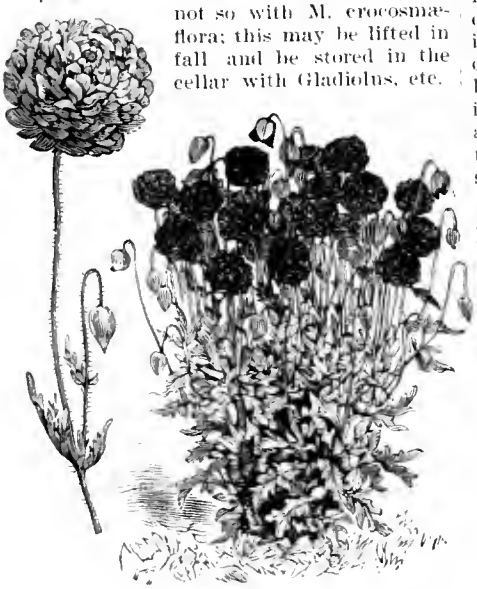
In the January number of POPULAR GARDENING Mr. Falconer observes "there are very few of the Alliums worth growing as pot plants." I send herewith a specimen of Allium triquetrum, which I think you will admit is one of the few. A 12 inch pan has upwards of 40 flower stems showing on it, each bulb producing 3 stems. The flowers are white keeled with green, with broad, graceful foliage. It seeds freely, and if sown when ripe produces flowering plants first year. It is a native of Algiers.

Lachenalias are a class of plants well worthy of cultivation. One of the best is L. Nelsoni, a hybrid variety, resembling L. tricolor, but is more robust. The spikes are thrown well up above the foliage, and last about six weeks in perfection. Ours are grown in shallow 8-inch pans, several of which are promising a dozen or more spikes of bloom.

Another pretty bulbous plant is Tritelia uniflora, and well adapted to pot culture. The flowers are white with a blue line in each petal, and are also sweet scented, rivaling even the Freesia in this respect. The variety Lilacina has sky blue flowers and is a suitable companion to the type.

The Hoop Petticoat Narcissus, (*N. bulbocodium*) and varieties, should also be in every collection of spring bulbs. Ours have been flowering for the past six weeks, and very beautiful they are, lasting a long time, and if taken care of and not allowed to become dust dry in summer, they bloom well year after year. All the above do well in an ordinary greenhouse where frost is excluded, and a temperature of 45° to 50° maintained. They should be potted in August before root action commences, in sandy loam, a little peat and decayed manure, and will by the display of flowers in spring well repay any attention bestowed on them.

We find that to do Montbretia Pottsii well it needs to be kept green through the winter, drying off does not seem to answer. It is not so with M. crocosmæflora; this may be lifted in fall and be stored in the cellar with Gladiolus, etc.



CRIMSON CARNATION POPPY.

and when planted in spring soon grow rapidly. A bed of it here last summer was a blaze of color for two months, far superior to its reputed parents, M. Pottsii and Crocosmia aurea, which were growing on either side of it.

Apropos of Hellebores there is none to compare with H. niger altifolius, the blooms of which are pure white from 3 to 4 inches in diameter, and before the advent of snow ours were a picture. Out of a collection of 18 sorts there is none to compare with this.

About Some Garden Poppies.

ELMER E. SUMMEY, ERIE CO., N. Y.

Why the Perennial or Oriental Poppies (*Papaver Orientalis*) as one class were ever subjected to the slight by flower lovers that they seem to bear is not easy to understand, as we consider their extremely showy qualities when in bloom, together with their moderate demands in the way of attention. As to the latter point it is reduced to about this: A rich, moist, well-drained soil; division and resetting in August after the season's growth is matured (if division is deferred, as is sometimes done, until spring, but a few weak flowers will be had the same season). This section really is entitled to a front place among our hardiest perennials.

The rich orange-scarlet flowers, borne singly on the rough three-foot flower stems are five or six inches in diameter. They are at their best in the month of June. At the base of each of the four petals is a deep purple-black spot, suggesting a cross. Numerous purple stamens shower a profusion of golden pollen over the parts, causing an appearance that is pleasing.

Besides increasing by division of the roots, the Perennial Poppy is easily grown from seed. This should be sown some time previous to midsummer for a crop of bloom the following season. An excellent situation in which to grow the plants is the shrubbery border, on its sunniest side, the flowers showing finely against the backing of green that is afforded. Separate clumps of them in that portion of the grounds devoted to wild garden are also well in place.

The Bracted Oriental Poppy (*var. bracteatum*) from Siberia is a remarkably fine dwarf form of the Oriental, though scarcely so free blooming. Its low habit and pleasing style of flowers with their green leafy bracts beneath, renders this a most pleasing variety. The flowers come in a variety of colors.

The Iceland Poppy (*P. nudicaule*) a dwarf species from Siberia and Northern America, has deeply cut leaves, large, rich, yellow and other colored flowers on stems a foot to 15 inches high, and is valuable for the border or rock work, forming rich masses of cup-like blossoms. This, like the preceding one, is easily raised from seed, which is fortunate, as the dwarfs, though they be true perennials, seem not to be sufficiently hardy to be generally reliable in our American winters.

The Alpine Poppy, a native of the higher Alps in Europe, is another pleasing perennial species, to be treated as an annual. Its beautiful white flowers having a yellow center on stems a foot or less in height, and with its lobed, finely cut foliage is attractive.

But notwithstanding the merit of the perennial species of Poppies, no doubt the more common, if somewhat less beautiful Poppies of the hardy annual class, will also continue to be popular among flower growers. Of these the seed may be sown either in the fall or spring, but with a gain of several weeks in flowering time, by adopting the former time. The seed should be sown thinly in rich soil where they are wanted to bloom, thinning out the plants to six or eight inches apart. In semi-wild parts of the garden and along drives they may be made a prominent feature, as few other plants, whether hardy or not, will afford so brilliant and effective a display, resembling indeed Tulips as seen from a distance.

Among the best sorts are the French and German Poppies, known botanically as *Papaver Rhœas*, and embracing such varieties as Carnation, Ranunculus and Picotee Poppies. These latter are double flowering forms of the common red Corn Poppy, and show nearly every shade of color except blue and yellow. In height they range from two feet to three feet.

P. umbrosum is a striking and showy sort, dazzling scarlet flowers with a jet black blotch on the inner face of each petal, sometimes margined with ashy grey. The black

PAPAVER PAVONIUM (PEACOCK POPPY.)

spot being conspicuous on the outer surface of the petals it makes of masses of plants a grand display early in summer, following Anemone fulgens, and vieing with it in brilliancy. This species is a native of the Caucasus and is a very hardy annual.

The Opium Poppy (*P. somniferum*) should also be mentioned. This in its natural state has large, single, variously colored flowers which soon fall away, being succeeded by a capsule from which, when wounded, there exudes a milky juice that on drying forms the opium of commerce. The hybrid varieties of this species deserve a place among our most ornamental kinds. They require the same treatment as do other annual sorts.

550. **Propagating Large-leaved Begonias.** I presume you refer to B. Rex and its varieties. If so, would say that they can be readily increased by taking the older or well matured leaves and cutting them in sections, cutting each section in such a manner as to form a junction of the ribs at the lower end of the cutting. Then lay them in pots or pans filled with sand, and place in a warm, damp place, or place the leaves, cut as above described, in a warm, damp part of the propagating bed.—C. E. P.

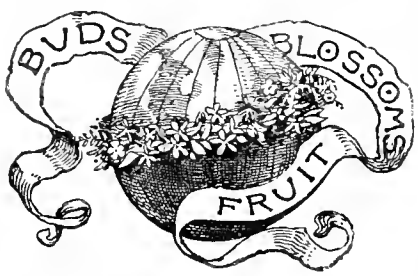
555. **Camellia Management.** Do not trim the roots, but about the 10th of May plant out in a well enriched border, in a partially shaded situation, and mulch with coarse littery manure. Water whenever necessary, and syringe freely during hot, dry weather. Sponge off the leaves occasionally. About the middle of September take up and repot. Use porous or soft baked pots, and let them be proportionate to the size of the plants. Drain the pots well, if the plants are one-third filled with drainage it is none too much. Use a compost composed of two-thirds turfy loam, and one-third well decayed cow manure. Never permit the plants to suffer for want of water at any time, and after the plants are brought inside, place them where an average temperature of from 40 to 50° is maintained. Extremes of drought or moisture, or a high temperature after the plants are brought inside will certainly lead to dropping of the buds. When the plants are in a state of growth, they may be given a higher temperature of from 10 to 15 degrees.—C. E. P.

516. **Cyclamen Treatment for Continuous Bloom.** To insure as long a season for these as possible the plants should be divided and kept in two different temperatures; those that are flowering or fast approaching this condition produce the finest blooms when accommodated with the temperature of a warm greenhouse, say 45° to 50° by night, and a little warmer in the day, but with this they should be kept well exposed to the light, with air every day. Give particular attention to keeping down aphides which, if allowed to remain undisturbed even for a short time, do irreparable mischief to the leaves and advancing flowers. Those that are intended to succeed the earliest blooming lot should be kept quite cool, so as to retard the expansion of the flowers as long as possible.

The First Violet.

A Violet dainty and fair
Crept out of its mossy nest,
And lifting its face with a modest air
It gazed on the rosy West.
The dew on it turned to ice,
And it trembled with chattering chill·
The Violet longed for its paradise
Afree from malarial ill.
It curled up its toes and died
To the sob of a dismal lay·
The Violet should have stayed inside
And waited s'mother day.
—*Detroit Free Press.*

Though the Ground Hog and Crocus creep into their holes
It's spring, and the almanac shows it.
Though a polar wave over the universe rolls
It's spring, and we don't care who knows it.
—*Robert J. Burdette.*



Set some trees every year.

Have you a Weigela bush?

To pot loosely is a poor plan.

Have you made out your stock list?

Clubs of subscribers are our delight.

Cremation for tent worm egg clusters.

Plant some Gladiolus bulbs very early.

Plant diseases seldom start in good soils.

A quick growth for delicious vegetables.

Hanging baskets are often overcrowded.

Trim Evergreens either in March or June.

As plant growth increases increase the air.

March sunshine gives the pot plants a fine lift.

For droughty sections Petunias are safe flowers.

Asparagus is not a success as an evaporated vegetable.

The neatest support for Sweet Peas is a low wire netting.

For pets, house plants are infinitely ahead of dirty lap dogs.

In Onion culture the early planted seed always give the best results.

Wanted. Yet more items and articles on the experience of our readers.

The planting of evergreens tempereth the winds to the country home.

Good feeding must attend rapid growth, in trees and plants as well as in animals.

Bad drainage has killed more pot plants than growers have perhaps ever suspected.

Last summer we saw a handsome hanging vase consisting of a Gourd rind as the soil holder.

The more subscribers the better can this paper be made: a hint to every reader to recommend it to their friends.

Not how much ground to be covered but how well should be the controlling question in deciding on the size of the garden.

A Delicious Apple. We would advise planting a tree of the Mother Apple in every amateur list for its excellent eating qualities.

If you have a rockery, and the Mountain Pink, *Phlox subulata*, is not one of the plants upon it, order a piece of it this spring by all means.

Victoria Aster, "Light Yellow." Although not strictly yellow it is a near approach to it, and a desirable addition to Aster colors.—*L. W. G.*

The Pocklington. An intelligent cultivator writes that he had resolved to throw it away, but 1887 has determined him to plant a few more.

With the future tree in the mind's eye, when setting young stocks and pruning, delicately but with judgment, there will be no necessity of murdering the tree in after years with the saw.

Lightening the Soil. I have seen a ten rod garden, the soil of which was heavy, made light and friable by the addition of a dozen loads each of pit sand and coal ashes, and ten loads of good manure.—*C. C. G.*

As for exposure, a north, northwest, or northeast one is the best for the Apple, and indeed, for any fruit except the Grape; give that all the sunshine you can. For the vegetable garden choose a southeastern exposure.

In Woodsdale, Kansas, the planting of street trees is to be consistent with the names of streets, to an extent, thus: Elm street will be planted with Elms; Locust, with Locust trees; Poplar, with Poplar trees; Cherry, with Cherry trees, etc.

Early turning of the soil has the advantage even for crops planted in May, that late freezes will yet serve somewhat to mellow it, and it will be in better shape from the spring rains for withstanding the early droughts that sometimes prevail in May and June.

What to plant is as important to know as how, when and where to plant. A careful perusal of our advertising pages in this and every other issue will throw much light upon the former subject. The index to advertisements on the second page renders this department almost a complete directory of garden supplies.

The Post Office or Corner Grocery, Which? We think better of our readers than to suppose that a single one of them patronizes the corner-grocery seed boxes, when they can purchase of all seedsmen whose cards appear in this paper, by going no further than the post office to transact the business. But to patronize the latter class may need a little advance action. Good gardeners calculate ahead.

Seedling Raising. Some years ago E. S. Carman got together all manner of Geraniums, every kind he could, both at home and abroad, and devoted two years to cross-fertilizing and raising new varieties from them. At one time he had 2,500 of his seedlings growing in his experiment grounds. And he frankly admits that not one of them was superior to sorts already at that time in cultivation.

Test of Novelties. A reader whose name became disconnected from her manuscript, else we would give it, thus comments on a few novelties: "I found the much lauded 'Turner Hybrid' Tomato and the 'Mikado' to be identical, and a beautiful early fruit. Of Tea Roses I had 60 varieties the past summer, all bedded out. I find 'Bennet' not an outdoor Rose. It will not grow bedded out with me."

Snow as a Winter Cover. Nothing equals it. When but three or four inches deep it takes a long time for the severest cold to penetrate to the soil below. This is the secret why many plants that come from places far north, like Siberia, but where the ground in winter is perpetually covered with snow, often fail to survive the winters of much warmer regions. A striking illustration of the compensations of Nature.

A Rose Hedge. It makes a beautiful embellishment. It is easily provided. Employ an ordinary wire fence with posts at eight feet apart for the frame work. For plants, use in the north the Prairie Queen and Baltimore Belle Roses to cover it, setting the plants two feet apart, in well prepared soil. In the south the Cherokee Rose is right for the purpose. With but little attention annually to training and pruning, such hedges will soon become very attractive.

Footprints on a Lawn after Snow. When one walks over the snow, it is trodden down firm in a solid compact mass, so that if frost follows, it becomes a block of ice. It is in my opinion the contact of the frozen snow with the grass that causes the discoloration that ensues. The weight of the human body presses it firmly down upon the grass, fracturing the blades, and frost turns them brown. That is my theory, but it may be that a better one can be propounded.—*R. D.*

Hyacinthus (Galtonia) Candicans. Concerning this plant, which was figured last month, Mr. W. E. Endicott, Norfolk Co., Mass., writes: I raised this fine bulb twenty years ago from seed, and for many years allowed it to remain in the ground, where it flowered finely every year. At last came a winter when we had several days of very severe weather with no snow on the ground. My entire stock was killed, and since then I have kept on the safe side by lifting the greater part of my bulbs.

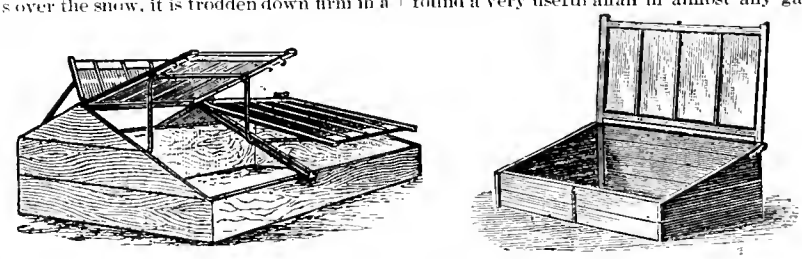
David W. Judd, president of the O. Judd Co., Agricultural Book publishers, etc., of New York, died of pneumonia on February 14, aged 50 years. He was a graduate of Williams College, Mass., in 1860. Enlisted at the outbreak of the war, and rose to be a captain. Member of the New York legislature in 1871. He was editorially connected in succession with the New York Commercial Advertiser, the defunct Hearth and Home, and later with the Agriculturist. He was the author of several books, and was never married.

Testing Seeds. A convenient, sure, and neat way of testing the germinating qualities of seed is to take a piece of cotton or woolen cloth, about the size of a pocket handkerchief; wet in water, wring out and fold once or twice, then lay on the seeds and roll up the cloth and fasten with a pin. Keep moist by watering a little once a day. Most seeds will sprout in from two to ten days, and when treated in this way they can be easily examined from time to time, it being only necessary to unroll and roll up the cloth.—*W. C. Jennison, Middlesex Co., Mass.*

Potting Soil Always Ready. How I prepare soil for house plants is this: Great heaps of leaves are raked up in the fall, avoiding those of the oak, which are said to contain too much tannin. These in spring, much reduced, are transferred to a bin in the cellar holding three or four bushels, and composted in this way: to each bushel of leaves was added about half a bushel of garden earth, a peck of sand, and a peck of old manure, all occasionally stirred; once or twice in summer a pail of hot, strong suds added. By fall it was like meal, and suited most plants. Reserves of sand and manure are kept for special cases.—*F. E. Briggs.*

Honey from Apple Blossoms. Prof. Cook says in the New York Tribune that but few kinds of honey are superior to this. The color is light amber, and though not quite equal in appearance to that from clover or basswood, it is not so dark as to be objectionable. The flavor is very characteristic and reminds one of Quince preserves. He has had it sampled many times and no one has ever expressed anything but admiration of its quality. The fact that so early in the season there are very few bees in the hives, as there are yet but few pleasant working days, accounts for the fact that we usually get very little honey from the fruit blossoms.

Several forms of plant frames after English patterns are shown on this page. The one to the left is peculiar in being double roofed, having narrow lifting sashes at the back, and in having a device for holding up the sash, which obviates the danger of its falling, as would be liable if it was propped open with a stick. This sash support is made of rod iron and turns down inside of the frame and out of the way when the frame is closed. The sash lifted, and the support is prevented from falling by several hooks on the underside of its frame. The frame to the right is simply one of small size, covered with a hinged sash. A frame like either of these would be found a very useful affair in almost any garden during the winter for protection and in the spring for hastening vegetation.



SEVERAL FORMS OF PLANT FRAMES AFTER ENGLISH PATTERNS.

Golden Dwarf Celery. This variety illustrated opposite is planted more largely than any other in the great Celery region about Kalamazoo, Mich. As our correspondent, J. Von Bochove, pointed out in these columns last month, it is prized more for its fine quality than for the size it reaches. If thus it is more desirable for market purposes, it should certainly be all the more a favorite for family use, where quality coupled with productiveness are always looked upon as chief points of merit. The variety may, on account of its under size, be planted at four inches apart in the rows, with these four and one-half

feet apart. Owing to this dwarfness of habit the work of hilling is greatly reduced over that for the larger kinds. Its beautiful golden color renders the variety decidedly attractive when ready for the table.

Losses Arising from Grafting. Young, vigorous trees must be grafted with some degree of caution, as well as with a thorough knowledge of the work in hand. A large proportion of tops cannot be removed from such without injury, as there may not be enough top left to elaborate the flow of sap through its leaves. Then the grafts are often destroyed and the tree injured by what gratters call "flooding." I have seen orchards completely destroyed from such causes. One which I recall—a Bellflower orchard—the owner was led to think would pay better to have grafted. He had it grafted and it is now among the things that were. One of the men who grafted this orchard stated that it had been heavily trimmed just before gratting. No doubt a great many times there is more lost than is gained by grafting young, vigorous trees.—*B. C. Fairchilds.*

Home Made Hanging Baskets. We make ours for ferns and flowers in bad weather in winter. Two sizes of wire are required. One to form the framework and strong enough to bear considerable pressure when made into a basket. A pair of pliers and a small cutting instrument to cut the wire into lengths are required. A basket is formed of three circular rings, made of the strongest wire. The smallest ring is placed at the bottom, the largest at the top, the other size between. Our baskets are made some a foot in size and some quite small. A small ring of a lesser-sized wire is to form the center in the bottom, and from this ring pieces of wire just long enough to reach round the sides of the basket and fasten at the top are placed at regular intervals of 2 to 3 inches all round the basket till the whole is bound neatly and strongly together. Four pieces of wire are then fastened in the top to hang it up by. The whole is painted two coats, and when the paint is dry the baskets may be lined with moss, and then filled with anything appropriate. We always cover the sides of the baskets with hanging growth, so that no part of the basket is seen.

Rhubarb at the South. Our correspondent, H. A. Green, of Chester Co., South Carolina, reports it is his experience after several trials, that Rhubarb cannot be successfully grown as far south as his State. He says that other practical gardeners in his vicinity have reached the same conclusion. But this does not agree with the statement of that able work, White's Gardening for the South, at least so far as some States still farther South are concerned. In that work we learn that Rhubarb succeeds perfectly well in middle Georgia. Try again friend Green, observing to plant good roots in a rich, rather light loam, that has been worked two spades deep. The plot should be in an exposed position, open both to air and sunlight. Cover the crowns about two inches deep; do not gather any leaves the first year. If any plants fail remove them with the soil near about the roots, and replace both. For new plants you can uncover an old crown and cut from it a bud with a piece of root attached. The plants should have the flower-stalk broken out each season after it fairly appears in sight. A coat of manure ought to be scattered over the surface of the patch annually. It is well at the South to plant newly every five years.

Hedges. The Barberry. Since the general introduction of barb-wire fences, the importance of hedges has greatly diminished, but for both ornament and utility they may still be employed to advantage. The most perfect and really substantial are a union of wire and hedge plant. Formerly the Honey Locust and the Osage Orange made the best barriers; but the Honey Locust requires much and frequent cutting back; and the Osage Orange as much so, with the additional drawback of winter-killing in regions of severe winter. The Buckthorn and the Barberry are both hardy, and both have a hedge-like growth, but neither are stiff enough alone for farm barriers. But with two or three barb-wires included with them, stretched successively while the hedge is growing in height, they become perfect—requiring but little cutting back, forming a stiff hedge, and presenting a fine ornamental appearance when kept in good shape. The Purple Barberry is as hardy as the common sort, and makes as good a hedge, and when in bloom early in the season, or in scarlet berries later, is an object of great beauty. The plants are easily raised from seed, and are very readily and safely transplanted. The Privet has naturally a hedgy growth, and is often recommended for hedges, but it is not perfectly hardy, and is liable to die out in patches.—Country Gentleman.

Plant Propagation, Aphis, etc. "M. R. W." writes to us as follows: I think February or early in March a most excellent time to raise the summer bedding plants. To those whose space in sunny windows is limited, no better plan than to root the cutting in the same pot with the plant from which it was taken. Take a well ripened cutting, one that will not snap off too easily, pinch out the top and insert to a good depth in the soil; it will root easily, grow and make a thrifty plant for bedding out in May. You may in this way have several dozen made ready without taking up any extra room. Has any reader trouble with Aphis on potted Tulips? I believe

GOLDEN DWARF CELERY. (*See Opposite Page.*)

in the "ounce of prevention." I have been much pestered in times past, but now when I bring Tulips out of the cellar I just sprinkle "fine-cut" Tobacco over the top of the soil, so that when I water the soil the fumes are enough to disperse, even Mr. Aphis if he chances to be making a friendly call on that shelf. I had a beautiful Salvia splendens, but all of a sudden it began to drop its leaves, and I immediately examined it and found another much to be dreaded insect pest, red spider, at work. I prepared some tepid water, and made quite a suds of whale oil soap. Then taking the pot of Salvia I set in the pan of water, and using an old soft tooth brush, I carefully washed every leaf, both upper and under side, this I did three times, then sprinkled a little sulphur on top of the soil and the plant is now growing finely, and shows no sign of the attack.

About Some Double Flowers. Double Petunias are favorites with many, but in my opinion a first-class single variety is much superior; the plants of the finest double sorts are so apt to be of poor and sickly growth. The double Lilliput-flowered is, I think, the finest class of doubles, the plants being of dwarf, bushy, healthy growth. The flowers are small, have dark velvety petals, some variegated with white, and what they lack in size is more than made up by numbers. Double Balsams are very erratic things; plants that produce perfectly double flowers to-day may bear nothing but single or semi-double ones a week hence, and perfectly double and single ones are often found on the same plants at the same time. In general the production of double flowers on plants grown from seed is often uncertain from several causes, even when the best of seeds are sown; the soil and character of the season, and also the mode of culture, have more or less influence. Asters show a tendency to become the most double in a wet season, while single and semi-double ones are most abundant in a dry one. This is probably due to the well-known law in plant life, that anything which checks growth or threatens the life of the plant causes it to expend its remaining vitality in the effort to perpetuate its kind in the form of fruit or seeds. High culture and luxuriant growth are, as a rule, most favorable to the production of double flowers. Double flowers are the result of cultivation—monstrosities from a botanist's point of view—and rarely found in a wild state.

L. W. Goodell, Dwight, Mass.

New York Fashions in Flowers.

Some new flower-pins introduced by Siebrecht & Wadley are quaint and appropriate. They are ordinary long pins, but instead of the usual glass knob they have a bit of bark or natural wood forming the head. Some have the seed of Liquidambar, but this is rather cumbersome; the prettiest are those with a little twig or bit of bark. The wood is polished or varnished.

The florists whose business is amongst the most fashionable people all say that set designs and elaborate, evidently labored decorations, are rapidly going out of style. One Fifth Avenue florist says he makes surprisingly few funeral designs, but he is often called upon to decorate a room where a funeral is held, or where the remains are laid. The mirrors are veiled with graceful vines, and the room is simply decorated with plants and a few flowers. Colored flowers are used even more than white, not merely pale, tinted ones, but such glowing blossoms as Jacks or Beauties.

Pink and white, or yellow and white, still lead as dinner table decorations. Artistic simplicity is the effect sought after. The favorite centerpiece with one prominent florist is a flat, diamond-shaped basket. It is loosely curled up at the sides, and has a handle crossing diagonally. It is made of bronzed or gilded willows, and is loosely filled with a mass of flowers. One exquisite combination was of Cypripediums, Mignonette and Acacia. Mignonette and Yellow Daffodils is another combination, or Daffodils and Freesias. The favors with these decorations show the same tints, though made with different flowers. Some contain Daffodils and Freesias; others the first-named flowers, with Lily of the Valley, or Roman Hyacinths, or White Lilacs.

One elegant arrangement in yellow was at a dinner given by a lady who is the happy possessor of a solid gold dinner service. Sprays of Acacia were laid on the table, forming a graceful tracing over the cloth, and there were baskets and favors of similar flowers.

Mme. Cusine Roses are the favorites for basket work; they show up well at night, and in a pink and white decoration they do well with Grace Wilder Carnations.

Another dinner arrangement was remarkable for its simple taste. The center was a low, flat, round basket. It was filled with a mass of Lily of the Valley, bordered with pale-tinted Lilacs. About a foot from the basket was a sort of wreath or garland laid on the cloth; it consisted of the Lily and Lilac laid loose on the table and formed the favors.

Bouquets seem larger than ever. One beautiful one was about 30 inches across. It was a loose bunch of La France Roses, edged with a fringe of Lilac and tied with a pink sash. Hardly a thing one would want to carry an entire evening without aid, however.

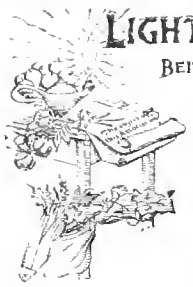
A beautiful and—be it said—fashionable gift is a graceful bunch composed of a few Orchids, Laelias or Dendrobiums, tied up with Maiden Hair Ferns.

The usefulness of the Adiantum grows more apparent every day. It forms the simplest table decoration, yet nothing is more charming than pots of Cuneatum slipped into silver baskets. Flat baskets filled with these Ferns are readily transformed by a few Orchid flowers into very handsome center pieces.

In set funeral designs Le Moult doubtless has the largest trade in the city. He has to fill so many out-of-town orders he is often called on to make very elaborate symbolical designs. What is called the Beecher design is very popular among his customers. It consists of a pillow of ivy leaves, in the center of which is a wreath, raised above the pillow; from each of the four corners springs a Cycas leaf; the four leaves meet arch-like above the pillow; two doves in the arch hold white ribbon in their beaks, and this appears to support the wreath; four other Cycus leaves curve over the pillow and meet under the wreath. Of course these Cycus leaves have a wire down the mid-rib; with that they can be bent into any shape.

This desire for a symbolical design is sometimes carried rather too far for taste. A recently deceased employee on the Elevated Road was commemorated by a floral piece representing a section of the "L" road, pillars, girders, and all, with an engine and cars standing on the track. An ordinary engine and tender is not at all uncommon; but all these designs, while called for by some, are left severely alone by persons with any pretentions to taste.

Emily Louise Taplin.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Shaffer's Colossal Raspberry does well either in a wet or dry season.—*E. Y. Teas.*

The Worden Grape, thinks Granville Cowing, of Muncie, Ind., will crowd aside the Concord as the Grape "for the million." So believe many cultivators.

Always to be Remembered. That one common plant, lovingly cared for so as to be thrifty and luxuriant, is better than a large yard full of neglected, weedy, or hen-scratched attempts at floriculture.—*Whitaker.*

Okra, or Gumbo, is pre-eminently a Southern vegetable, excellent to put in soup, which everybody likes, and there is a growing demand for it in all Northern markets. Somebody should supply the demand. Prices are usually remunerative.—*A. A. Cowdry.*

Celery Among Other Crops. Some gardeners sow seed with a machine between the rows of early Onions or Lettuce, and afterwards thin out the plants. In some seasons this method is successful, but it often fails in dry seasons, and is not so sure as sowing under glass. Celery demands clean summer cultivation.—*W. W. Rawson.*

Arbor Day and the School Yard. The celebration of Arbor Day fosters a taste for tree-planting, especially among school-children. Through its kindly influences every school-yard will in a few years be provided with grateful shade, and the pupils will acquire instruction through the planting of trees. It is a beautiful custom, growing in favor.—*Thomas Meehan.*

Peach Yellows. At the recent annual meeting of the Peninsula Horticultural Society of Delaware, the subject of the yellows in the Peach, which is devastating the orchards of Kent County, Delaware, was discussed at length, and the stamping out process advocated. The society will ask the Legislatures of Maryland, Delaware, and Virginia to enact a law compelling growers to destroy all trees affected as soon as discovered.

Sub-irrigation. Within the last few months I met a gentleman from Arizona who is perfecting a system of sub-irrigation through pipes laid one foot or more below the surface of the ground, the claim being that water can be let out in small quantities as desired to the roots of trees or other growing plants, and that more than twice as much water would be necessary when applied to the surface of the ground.—*President Johnson of the Kansas Horticultural Society.*

Safe Advice about Varieties. Pres't Pearson struck the right key when, at the recent horticultural meeting of New Jersey, he deprecated the offering by managers of highest prizes for "largest collections of fruits," regardless of quality. He had himself received these prizes for Grapes—"encouraged for exhibiting the multiplicity of his misfortunes." The bulk of these large collections are of little value and only serve to occupy space and bother and confuse the examiners.

Ornamental Trees for the North. The following list has the endorsement of the Wisconsin State Horticultural Society. *Evergreens,* in the order named—White Pine, Norway Spruce, White Spruce, Arbor Vitæ, Austrian Pine, Scotch Pine. *Deciduous trees,* for timber—White Ash, Black Cherry, Black Walnut, Hickory, Butternut, White Oak, European Larch. *Street trees*—White Elm, Sugar Maple, Basswood, Ash Leaf Maple, Norway Maple. *Hardy shrubs*—Snowball, Upright Honeysuckle, Purple Fringe, Purple-leaved Barberry, Lilac, Black Alder.

Celery versus Corn. There is a gentleman living in Ottawa who last season had a Celery bed of about five feet in width and about one hundred feet in length, in which he grew eight hundred plants that brought him ten cents apiece, or three for twenty-five cents. The bed was kept well tilled and watered, and the result was an immense profit for so small a piece of land. The way corn has yielded this season it would take at least one hundred acres to make the owner as much money as was procured from that little five-by-one-hundred-foot tract. *Willis of Kansas.*

Gardening for Profit. F. Y. Jarvis recently told, before an Otsego Co., New York Horticultural Society, how he raised 170 bushels of Onions on a little more than 1-5 of an acre of ground. How, also, he had used about 30 bushels of manure and ashes, and had 200 bushels of Parsnips on 45 rods of ground. Culver Gillette told of the possibilities of a fourth of an acre of ground. He raised and marketed about $350 worth from it. He planted Potatoes, Sweet Corn, Celery, Turnips, Cucumbers, Squashes, Tomatoes, etc. His secret of success was in heavy manuring and thorough cultivation.

Enlarging its Field. At the annual meeting of the Western New York Horticultural Society at Rochester, in January, the matter of changing the Society to a State Association was brought up, discussed and favorably acted upon, as the following resolutions, which were unanimously adopted, show: *Resolved,* That the name of the Western New York Horticultural Society be changed to the New York State Horticultural Society, and that its sphere of operating be enlarged to cover the entire State, and that its officers be authorized to make such changes and to procure a new charter or amend the old one. *Resolved,* That the officers of the said New York State Horticultural Society be requested to petition the Legislature for an annual appropriation of $2,500 for promoting horticultnre in the State.

Bees and Fruit. At the December meeting of the Michigan Horticultural Society much testimony was taken upon the old question of whether Bees Injure Maturing Fruit; nearly all in favor of the Bees. Mr. J. A. Pearce had a new point in their favor. He said that birds punctured a large number of his early Grapes and the juice ran out, disfiguring the clusters, and he thought they would be entirely unsalable. But the Bees came to his rescue and sucked up all the oozing juice, cleaning out the injured Grapes, so that a slight brush would rub off the dry skins, thus the unpunctured Grapes were clean and he was able to put them on the market, securing fair remuneration for them. Many instances were given where Bees were indispensable in promoting the setting of fruits, especially in Squashes, Melons, etc., and the fertilizing of Beans, Clover and Peas, which could not go on without the aid of the Bees.

How They Succeed in Indiana. Prof. Throop, in his recent paper before the Indiana State Society, mentioned several new Blackberries which had been tested at the college farm. Early Harvest he thought of little account, not perfectly hardy; Wilson Jr., likewise, very promising in other respects, was too tender for the rigors of the Northern Indiana winters. His opinion of the Snyder was in accord with the sentiments of the members of the Society generally, viz.: that it was perfection. The Kelsey Japan Plum winter-killed. The Nemaha Black Cap Raspberry takes the lead at the college farm, is nearly as large as Gregg, is hardier and very productive. Other members of the Society who had tested Nemaha gave it words of praise. Many new Strawberries were being tried, but a few were very promising. Itaska, strong, healthy plant, very abundant bearer, berries larger and better in flavor than Crescent. Logan was larger than Itaska, very fine in every point, making a valuable Strawberry. Lida and Jessie had made good growth; needed more time for determining merit. Of older Strawberries he thinks Cumberland best.

Much of Beauty for Little Money. Take any farmer's dooryard and without much expense or labor it can be transformed into an exquisite lawn. A few flowers, a vine over the door, some shrubbery and trees by the roadside will be suggested. Here, too, great satisfaction can be got without much outlay of money. It is marvelous what large returns can be obtained from a very small investment. He should not attempt too much in the shape of elaborate gardens and fantastic designs. The plain, rich carpet of grass would be preferable to such things. Simplicity always looks better than over-ornamentation. But everyone can raise a few of the beautiful old-fashioned flowers which grow easily and do not require a great amount of attention. Their commonness does not change the immutable laws of proportion and color which constitute the beauty of a flower or plant. A group of Hollyhocks, Sunflowers or Dahlias in the back-ground, and such flowers as Phloxes, Zinnias, Asters, Larkspurs, Marigolds or Petunias in appropriate places, and Morning Glories and Sweet Peas over the porch will add many fold to the attractiveness and home-like appearance of hundreds of farms. A few flowering or ornamental shrubs, judiciously placed about the lawn or flower garden, will add much to the appearance. But do not overload. It is much better to have a little that is thrifty and healthy than to have more than can be well cared for. The Lilac and Syringa are better than many of the uncertain novelties that are offered.—*Geo. M. Whitaker before the Massachusetts Horticultural Society.*

Deep Culture and Drought. I would counteract drought by a deeper cultivation. To substantiate this I will refer to a strip of land lying along the east side of Marion County, where a number of years ago only twenty or thirty bushels of Corn to the acre were produced; while now that same land yields readily from fifty to sixty bushels per acre. Nearly double in twelve years, and all brought about through deep and thorough cultivation. In this section irrigation is impracticable. My son has a farm in the Cottonwood Valley, upon which he broke twenty acres, very deep, with a strong plow to which was attached a four-horse team. The result was thirty-five bushels of Corn to the acre, while his neighbors only harvested twenty bushels to the same amount of ground. Hitherto the people have been content with ordinary cultivation, but now it is different. There is a Frenchman residing in my vicinity who has a vineyard in which he put men to work spading up the soil to the depth of two feet. The result was wonderful. The vines thus treated knew nothing of dry, hot weather, but through it all continued to grow and prosper, bearing an abundant supply of the choicest fruit, while the vines growing on shallow tilled ground struggled hard to live and in many instances succumbed to the dire effects of the drought. Thus spoke J.W. Byram before the Kansas State Horticultural Society recently. He was followed by E. P. Diehl who said he heartily endorsed what had been said. About eighteen years ago he provided a subsoil plow by taking an old plow to the shop and getting the upright beam drawn out and strengthened. With this his ground was deeply subsoiled, thus enabling it to withstand successfully all droughts.

The California Meeting of the American Horticultural Society.

The annual meeting of this society was held according to programme, Jan. 24, 25 and 26, and Feb. 7, 8 and 9; the first part at San Jose, the second at Riverside, Cal. While the attendance of eastern horticulturists was not large, it was strong in the sense of including numerous prominent cultivators. The local attendance was good throughout and the exhibition, which consisted largely of improved varieties of Oranges, and other California products, was a great success. Numerous valuable papers, on fruit culture in the main, were read and discussed, and some of these will later be printed in our columns.

The time between the two meetings was taken up by excursions throughout the State. Not the least enjoyable and profitable feature of the meeting was a banquet tendered to the delegates by the ladies of San Jose, on January 26th, at which 500 people were present.

In the course of the meeting resolutions were adopted and forwarded to Congress in the interest of forest protection, and also on the tariff on fruits, in which latter it was set forth that any reduction from the present duty on fruits would work great injury to, if it would not destroy, many of our fruit interests. The unique paper by Dr. Albrecht, of New Orleans, on the Palm Tree, was so well received that it was ordered printed for distribution.

On Feb. 8th at the Riverside meeting the election of officers for the ensuing two years took place, resulting as follows: President Parker Earl, Cobden, Ill.; Vice-President, T.V. Munson, Denison, Texas; Secretary, W. H. Ragan, Greencastle, Ind.; Treasurer, J. C. Evans, Harlem, Mo.

Orchid Growing for Amateurs.

[A Paper by Mr. Alexander Wright before a recent meeting of a Horticultural and Cottage Garden Society.]

The amateur who undertakes the cultivation of Orchids, if he becomes interested in them, will soon conquer the difficulties of making a good start. Unfortunately the idea has got abroad that Orchids are difficult to cultivate. It may be so with a few but by no means with the majority of this remarkably distinct class of plants.

Every now and then we hear of what may be done in the way of growing Orchids in a *cool* greenhouse the night temperature ranging below 40°. That a few may be so treated I do not doubt; and among the number we may include Disa grandiflora, one of our showiest and prettiest late summer and autumn-flowering Orchids—a plant often killed by being subjected to too much heat.

But although Orchids may be grown in such a cool greenhouse, I do not recommend that mode of treatment in general. The house kept a little higher with a winter heat never below 45°, and we have a place in which a great many of our prettiest and easily cultivated species and varieties of Orchids may be successfully grown. To think that Orchids can only be grown in a house specially constructed for them is a mistake, as any structure in which a Geranium may be successfully grown will answer the purpose. One important point ought not to be forgotten—that is, the plant should be kept well up to the light. This can be done by using pots on which to stand the plants, or hanging up those that specially need it, and having the stages re-arranged to meet the requirements.

Kinds to Grow. I would strongly recommend commencing with the cool section, and if success attends your efforts, species and varieties requiring more heat may be added afterwards. The following list may be taken as representing the best of pretty, cheap, and easily-cultivated kinds;—Anguloa Clowesii, Cattleya citrina, Cattleya Trianæ (at warm end of house), Cœlogyne cristata, Cymbidium eburneum, Cypripedium insigne and its varieties, Dendrobium nobile (at the warm end of the house), Epidendrum atropurpureum, E. vitellinum majus, Lælia anceps, L. autumnalis, Masdevallia Harryana, M. igneæ, M. Lindenii, M. tovarensis, M. Veitchiana, Odontoglossum Alexandræ, O. Cervantesii, O. citrosmum, O. gloriosum, O. grande, O. Pescatorei, O. pulchellum, O. Rossii majus, O. triumphans, O. vexillarium (at warm end of house), Oncidium crispum, O. cucullatum, O. Forbesii, O. ornithorhynchum, O. tigrinum, Lycaste Skinnerii, Pleione lagenaria, P. maculata, P. Wallichii, and Sophronitis grandiflora give a good selection with which to begin. As their culture and wants become understood and mastered, the chances are that a great many more of the lovely varieties will be added.

Many have a fancy for some favorite genus, striving to obtain all the gems belonging to it. It does not imply that the rarer a plant is the prettier is the flower. Some of the fabulous prices paid for a single plant would be sufficient to build and stock a range of Orchid houses.

There are hopes of getting something good among imported plants, as there is always great interest in watching them flower for the first time. Seeing that imported plants are natural seedlings, and, it may be hybrids, there is always a difference to be found in the flower of each individual that opens. Certainly, freshly imported plants find a ready sale; and the quantity imported every year brings them well within the reach of the amateur.

Potting. The material used in potting Orchids is simple in the extreme compared with what is sometimes recommended for some particular plant. Good fibrous peat and sphagnum are all that is required for most epiphytal Orchids, with, perhaps, the addition of some pieces of charcoal. In potting great care should be taken to use only clean pots, and that the potsherds have been previously washed, as the cleaner and sweeter everything is kept, the better the plants will like it, and show the results in their healthy appearance.

The pots require to be filled three parts full of potsherds, or what is perhaps better, place an inverted pot inside the one intended for use, so that it comes about three parts up, and fill the space round it with potsherds. On this place a layer of sphagnum moss, and over it place your plant; then fill in round with rough pieces of turfy peat and sphagnum, making the whole moderately firm, but avoid anything like extremes. Place three or four patches of live sphagnum on the top, which will ultimately grow and cover the whole surface. When finished, the plant should stand about one inch or so above the level of the pot—the peat and sphagnum being so adjusted that the whole forms a rounded mass.

Avoid using bad peat having a close sandy texture, or of a close retentive nature; such peat soon gets sour, and consequently, the plants suffer. Do not use the fine portion that falls out as you break the peat up; that may be used for something else.

There is no law to lay down as to time for potting, but it may be taken as a safe guide that when the plants are starting into growth they may be potted if they require it. See that the soil which contains no roots, or say that has become sour, is taken away before potting. This helps to keep the plant in better condition; but if it should not be in a healthy state, all the soil should be carefully taken away, and the roots washed in clean water, cutting away with a sharp knife all decayed portions, afterwards re-potting in fresh material. In such cases a few pieces of charcoal may be added to the peat and sphagnum. Although there is nothing in the charcoal itself to help the growth of the plant, it forms a reservoir which stores up and gives off gases favorable to plant life.

(To be concluded next month.)

Successful Onion Culture.

[*By Wm. H. Derby, and others, before the Boston Market Gardeners' Association.*]

The essayist, Mr. Derby, confined himself to the methods of Onion growing at Revere, where the business has been steadily growing and is fairly profitable.

Seed Onions—Seed Raising. Good seed is a very important item. To grow it one must select carefully the best bulbs and place them in a dry place to keep with the tops on. Early in spring they are set out, after cutting off the old tops if any remain, in rows three feet apart and six inches between the bulbs in the rows. The crop is carefully cultivated and weeded, and in September the seed is cut and stored in a dry place until it can be cleaned. A barrel of Onions will produce about ten pounds of seed in a favorable year, but sometimes less than half as much.

President Rawson remarked that he formerly used to grow Onions from seed, but during the last four or five years had changed his practice. If he could grow the heavy and fine crops that Revere land produces he would follow the plan of Mr. Derby, but upon his lighter land he found it more profitable to plant sets. The cost of sets, 12 bushels per acre at $3.50 is more than double the cost of seed, the labor of planting the sets is also considerable, but is offset by the saving of labor in weeding, for sets are grown with only one hand weeding, while growing from seed Onions demand three or more hand weedings. Moreover the Celery crop which follows the Onions can be worked a month earlier where sets are grown and this is often a very great advantage. The sets come to market at better prices than are obtained when the Onions from seed come in. So that although the labor is greater and the yield not so large, as he is situated, there is more profit in the sets.

The short crop of Onion seed here this year he thought would not affect the price much; the western and southern seed is plenty and good, though the Onions grown from it are flatter than ours, still they are very good and the difference would not be noticed by many.

Fitting the Soil. The land at Revere is mostly strong clay loam and works best by applying in the fall a heavy dressing of coarse manure, which is plowed in; land thus enriched will admit of working a week earlier in spring than if not thus heated, a very important point with Onions, which must be planted early, the earlier the better, May 12 being as late as is considered safe. The best crops are usually grown on the strongest clay land. For fertilizers he relied almost entirely upon stable manure, although he had experimented with many other things in addition, but had not on the whole received returns enough to warrant a repetition of their use.

Mr. Rawson remarked that he had tried many artificial fertilizers always in addition to stable manure, but none of them seemed to be very profitable except wood ashes, which he valued highly. He used sulphate of ammonia on Spinach, however.

Mr. Kirby alluded to the opinion of chemists that Onions need much potash, and to the practice of the late Capt. J. B. Moore of using sulphate of potash on Onions; he had followed this practice and used, with good results, 400 lbs. per acre of sulphate of potash in addition to stable manure. Fertilizers of this sort can be applied after the Onions are up.

Mr. Hall alluded to the experience of Mr. Proctor of Danvers, who had grown good crops of Onions by the application of 50 bushels of wood ashes per acre, without other manure.

Culture. The rows are sown 13 inches apart with 9 to 12 seeds to the foot or 3½ pounds per acre. If Celery is to be grown on the same land, as is usually done at Revere, each eighth row is left blank for the Celery. Clean culture is very important, and for this purpose the Arlington wheel hoe is used very often, and several hand weedings are needed. The crop is housed, after drying in the field with the tops on, and sold as wanted through the fall and winter. His average crop was 600 to 700 bushels per acre on land, one-eighth of which is occupied by Celery, and on rare occasions he had known 1000 bushels per acre to be grown.

Drawbacks. This crop is subject to blight and smut, and is infected by green flies or lice. There is no remedy of much value, though many have been tried. Formerly the Onion growers used to grow them continuously on the same land, but recently they have adopted the plan of growing them only one or two years in the same place, thinking that they thus in part avoid diseases.

Mr. Derby thought blight was the result of excessive heat after heavy rains, or sudden and severe changes of weather in general; after blight appears, lice often follow.

Mr. Crosby remarked that blight usually made its appearance first on the driest parts of the field, and thought lice were the cause.

Mr. Tapley, cited two lots side by side planted with Onions. On one Onions had been grown for several years, but not upon the other; the new land was not affected by blight, while on the old lot blight was general. Mr. Taylor on the contrary had grown Onions many years on the same land with no difficulty from disease.

Some Experiences as a Fruit Grower and Exhibitor at Fairs.

[*Abstract of paper by "Blank Cartridge" before the joint meeting of the Missouri Valley and Douglass County (Kan.) Horticultural Societies, Oct. 15.*]

Twenty-one years ago I entered into the orchard business with an energy and determination to succeed that an insatiable appetite for fine fruit can only inspire. Planted about twenty-five acres with about twenty-five varieties, and for "greatest display grown by exhibitor" can defy almost any orchard of the same size in America.

Cropping the Land. Following older heads the first year, I cultivated low crops, such as Cabbage, Potatoes, rabbits and borers. All did well—especially rabbits and borers.

Second year drilled wheat north and south, leaving six feet for working trees. Secured good growth of wood, twelve bushels wheat and an ample crop of borers.

Third crop was corn, cultivating trees as a row of corn leaving about seven feet open space running north and south.

Next three crops were wheat, corn, and oats, always leaving seven or eight feet north and south along the rows.

Then, following the theory of low crops for three years, clover, gophers and codlin moth, succeeded by wheat. The gophers were disposed of with small potatoes primed with arsenic dropped into the front doors of their mansions. Then for three years low crops—clover, field mice, grasshoppers and katy-dids. Each a success in its line.

These were followed by wheat, oats and millet to the present time.

I know objections will be raised to such a course, "but fools rush boldly in where angels scarcely dare to tread." Good growth was made, and I have discovered no disadvantage in such a rotation, except the crops drew plant food from the soil faster than the clover returned it. A good dressing of fertilizers followed.

Pruning. The luxuriant growth that succeeded "cutting back" at planting, necessitated continuous pruning until pruning has become monotonous and laborious. An experiment on three trees, extending through ten years, during which time not a twig was taken away, giving sounder trees and better heads, has satisfied me that Nature prunes more wisely than man, and that the eternal pruning system is detrimental to our orchards. All pruning is best done in the bud; the thumb-nail the only knife needed.

When I began, the cry went up as the "cry of one man" for "low heads" for fruit trees. It would secure our trees against high winds and sun scald; and to a man with no experience and no reason it looked reasonable, and as one of that class I adopted and practiced the theory. Yes, I have low heads.

The Kansas and Missouri State Societies ought to employ a few laminated-steel-rebounding-

tripple-force kickers for the benefit of all advocates of "low heads." It is a violation of the law of natural growth. An Apple tree, like a Saratoga belle, will not live without a trunk. No tree should be headed under five and a half feet and spreading growers six to seven feet, to admit of cultivation beneath. The finest Apple trees I have ever seen were ten to fifteen feet to the first branch, pointing fifty feet heavenwards and capable of bearing 100 to 150 bushels of fruit. The first to give up the ghost with me were the lowest; the best now have the longest trunks.

Borers. Eternal vigilance and a sharp knife is the price of Borers. I've washed, cut and probed for them until my pants knees were hard worn. I've tried soft soap and find it succeeds better with some people than with worms. I've tried many mixed washes—the knife is the only cure. Once lodged under the bark, nothing will remove them but a supple back, and iron will and a sharp knife. Texas Onions set close around the trees act as a preventive.

Rabbits. Everybody has heard of Rabbits. Blood-wash is quite good. Corn stalks make a good protection against rabbits and a warm house for field mice with winter supplies ready at hand.

Thoroughly clean culture with hills thrown around the trees is quite safe except in deep, hard crusted snows. Strong manilla paper cut in three-inch strips, wrapped upwards and tied at the top is the best anti-rabbit I've found. Cut the tie in the spring—the paper strips gradually drop to the ground, affording incidental protection against borers. Axle grease does well but must be washed off in the spring.

At last I got an orchard, and those low headed trees just make an old sow laugh. She will learn to jump up, grab the lower limbs and shake like a truant schoolboy, until her shirt bosom is full.

Selling Fruit. The first few years I ran a market wagon, secured a good set of customers and realized good prices, attaching a silver battery to the pocket nerve.

The market wagon became too small; 800 to 1000 barrels must have a faster way to market. Western Kansas, Colorado and Northern Illinois offered ample room, and four years ago I was building up a good trade, shipping direct from the orchard, with an increasing demand I had not facilities to supply.

Evaporating has been found a profitable way to dispose of the unmarketable. An evaporator that will use thirty to forty bushels a day, requiring a man and boy, will take care of all scraps in a 25-acre orchard. Using a small one, I made some fine fruit obtaining 11½ to 13¾ cts. per lb., with a demand for ten times what I could make. This was packed with a screw press, forty to sixty pounds, in cracker boxes, having a glass face to show fruit without opening.

At the Fairs When Kansas City opened her first great fair I entered for the "largest and best collection of Apples." I had 120 plates—about seventy taken from the twenty-five varieties originally set—I placed one variety under four names and others under two. I didn't know any better and suppose the committe was in the same fix, as the blue strings ornamented the table, and a twenty-five dollar check—anyone knows how useful such things are.

At another fair in the same place I beat the world, and don't you forget it. Crowned with honor and checks for about one-half dozen other premiums, I retired from the field of emulation and rested on my laurels.

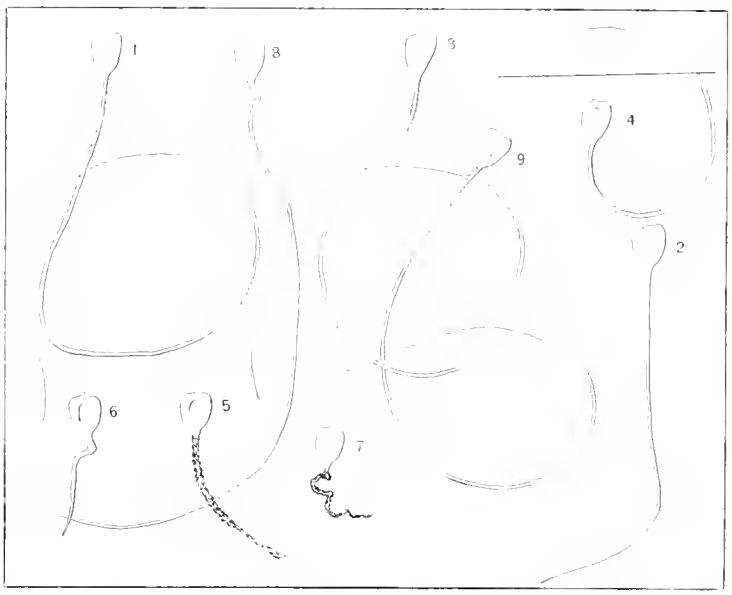
After I had rested until I got tired, at the earnest solicitation of "many voters," I announced myself a candidate for the "best display of fruits grown by exhibitor," and for a $25 check of the Secretary. My competitor, without a bearing tree in the world, captured the Secretary's invitation to call at the bank, and the mourners went about the streets. He had about 100 varieties. I had about 150,—120 of my own growth. The committee may have been correct, but how 100 varieties a man didn't own could beat 120 of one's own raising is "one thing I never could see into."

The committee reconciled me with premiums on winter Pears, dried Apples and Paw-paws.

Culture of Other Plants. My wife just dotes on Peaches. I've planted seed, set trees, budded new varieties and bought old ones, plowed, hoed, pruned and wormed; and succeeded one year in five in raising round-headed borers and peach-cobblers sufficient for a small family.

Pears, except for blight, would be my delight. Out of about 400 trees, perhaps ten sound and healthy ones remain. They are a surer and more remunerative crop than Apples, with neither borers nor backache to contend with.

Cherries I studied ornithology with a double-barrel shot-gun for ten years in a Cherry orchard, and can't tell a jaybird from a woodpecker. Then I applied a little painless dentistry—extracted about 100 trees by the roots, and planted the ground to horseweed and foxtail, for profit.



SOIL AND PLANT ROOTS.—*Corn Roots one week after planting in different substances as follows: 1 Potting Soil, 11 inches long; 2 Clay, 4 inches long; 3 Sand, 11 inches long; 4 Peat, 6 inches long; 5 Coal Ashes, 2 inches long; 6 Brick Dust, 1¼ inches long; 7 Sawdust, ¾ inches long; 8 Sphagnum Moss, 7 inches long; 9 Mixture of all the others in like proportion, 9 in. long.*

In the way of Plums I raised some remarkably fine crops of gougers and curculios. Even at the very base of the hen house, which all the while ran wild with chickens, pigs and bugs, they fell. Then I fell down and wept about $100 worth of tears over Damsons, Lombards, Imperial, Blue and Green Gages; and the wild ones continue to "flourish like a Green Bay tree."

I raised some fine crops of Grapes, made some wine, and saw the tracks old Noah made centuries ago. As I had no bad boy to curse for laughing at my folly, I declined to follow the trail of that grand old pioneer of the vineyard, abandoned the business, voted local option and marketed my Grapes at 2½ cts. a pound.

Meeting of the Western New York Horticultural Society in January.

The thirty-third annual meeting of this pioneer Society took place in Rochester, N. Y., January 25th and 26th. The attendance was large, being if anything above the average. The only drawback to the entire meeting was that Pres. Barry could not be present on account of the very stormy weather and his somewhat feeble health. He, however, had a fine display of late keeping Apples and Pears. A number of other members also exhibited various fruits. The following new officers were elected: President, Patrick Barry, Rochester; Vice-Presidents, S. D. Willard, Geneva; W. Brown Smith, Syracuse; J. S. Woodward, Lockport; W. C. Barry, Rochester; Secretary and Treasurer, P. C. Reynolds, Rochester. We have in the present issue room for but a few brief extracts of the proceedings, as follows:

From Pres. Barry's Address. I think most of us will be able to say, as regards business, that we have had on the whole a fair average year. Western New York, with her temperate climate, fertile soil, railway facilities, and proximity to the great markets, should be made the garden of America, and I hope every one present will determine to aid in making her so, as far as may be in his power. The fact is, if we do not move faster than for some years back, other parts of the country will get ahead of us.

When this Society was organized, thirty odd years ago, its main purpose was to call the attention of farmers to fruit culture as a promising branch of farm industry. From that time we may date our real progress. While we might have done better, and should have done better, I believe I can safely say we have the best and most advanced fruit region in the United States. This humble Society, without state endowment or outside aid of any kind, has exercised a wider influence than even its own members appreciate. Our limited means have narrowed our influence and it is thought by some of our oldest and wisest members that we should ask for some state aid to enable us to prosecute our work more efficiently. We could encourage improvement by offering prizes for the best managed orchards and gardens and for improvements in the grounds of farmers.

I alluded last year to the agricultural experiment stations as likely to do valuable work in experimental fruit culture and horticulture. I am fully confirmed in this opinion from reports of many of them recently received. Some of the agricultural colleges and state universities are also taking up the same line of experiment, and some of them have already made extensive plantations of fruit and forest and ornamental trees. The station in our own state is the most liberally endowed of any, and we have reason to believe it will do good work for fruit culture and horticulture, as well as for agriculture.

Soil and Plant Roots. From Professor A. N. Prentiss' paper on this subject, we condense the following, the engravings on this page being taken from the diagrams used to illustrate the paper. In Mr. Prentiss' experiments (made at Cornell University) kernels of Corn were planted in the eight different substances named in the heading of the annexed engraving, the diagrams of which illustrate the Corn at the end of one week. At that time no top growth was visible, but the roots were well advanced in the soil, this having been washed away. In No. 1 is shown the normal appearance of healthy roots, the soil containing all elements required in the proportions for plant needs. No. 2 is suggestive of the necessity of a porous soil. Clay being compact in texture, the root cannot so well penetrate and gather all the food required, a shorter and somewhat thicker root growth results. In No. 3 we see that sand has qualities, due, perhaps, to the quantity of water it will hold, favorable to root growth for a limited period, as is also evident from its extensive use for propagating beds by florists. No. 4, a substance largely used as a fertilizer with common soil, shows that alone it is not sufficient for plant support. Besides a small root being formed, it for some reason took an abnormal course, growing upwards out of the peat, above the seed, then re-entering it. There can be too much stimulant in the soil. No. 5 and No. 6 are materials in which all vitality has been destroyed by fire, no plant food being contained, except such as is in the water given them. No. 5, however, is of considerable value in combination with No. 2. No. 7, when rightly used (as a manurial absorbent) is of value, yet when fresh no food element is free or ready for use. No. 8, while favorable to root formation, has not the water-holding quality of sand, hence the difference of roots, this being of fair length, but very slender. No. 9, a mixture of these various substances in equal proportions, shows that with a sufficiency of plant food as contained in No. 1, 3, 4, the root will make a good heavy growth, the presence of the various other ingredients exerting no very marked effect in opposition.

The lesson that seems to be indicated by this single experiment, is that any soil, if supplied with enough of the right kind of material, will produce crops. Other experiments with other seeds may greatly modify, in details, our present impressions, yet the general rule of knowing and then of supplying the perfect conditions of plant growth must be the aim of every tiller of the soil.

Cold Storage. Mr. P. B. Crandall, Ithaca, N. Y., in a paper suggested that buildings like milk-houses used in the West seem to offer perfect conditions for the preservation of fruit, as the variation in temperature from 50° does not exceed 5°, though out-of-doors it may range from 110° above to 40° below zero. The required conditions for success in this matter being simply a building in which temperature and atmosphere is under control, a perfect condition of the fruit when placed therein, a temperature low enough to prevent ripening, yet not so low (32° or under) as to cause suspension of natural forces. The use of ice has in many instances proven unsatisfactory, is not absolutely required, and the fruit when removed decays quickly.

In the discussion it was recommended that fruit be left outside on the north side of buildings as long as possible before putting in the preserving house. Houses above surface were preferred to underground cellars, as in the latter fruit is liable to be tainted.

Pear Culture; Blight. Hooker, Rochester. Plenty of manure required. Fire blight seems to disappear under the use of Saunders' remedy, composed of one peck lime, ten pounds sulphur and one ounce carbolic acid. The tree trunks are washed in it in May, and after blossoms fall it is used to spray the foliage.

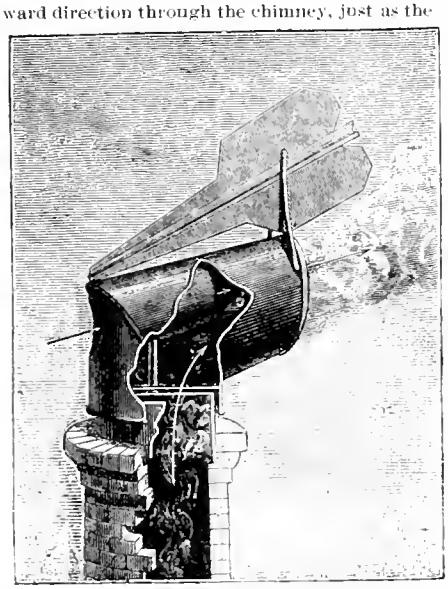
Moody, Lockport, had also used it successfully on an orchard of ten thousand trees, mostly Bartletts, though the Keiffer had of late been the most profitable. Anjou not doing so well as formerly.

Willard, Geneva. Keiffer highly esteemed in Philadelphia market. Profitable. Barry, Rochester, did not believe that the Keiffer is the coming Pear. Is not of high quality and thought that where a market for such a grade existed, the outlook for the future of a high grade was flattering indeed. Of winter sorts, Lawrence is early and good. Vicar, can be kept till April. Josephine, splendid variety, good grower, high vitality. Winter Nellis, with highest culture, and Anjou are the best, all points considered.

Smith, Syracuse. Salts the ground under the trees after snow leaves, as a Curculio remedy.

FROM VARIOUS SOURCES.

Novel Form of Ventilator. The ventilator herewith illustrated, and recently described in La Nature, should be of use for improving the draft of greenhouse furnaces, flues, etc., as well as of drying houses. It is constructed on the same principle as the steam injector, used for feeding water into steam boilers. It consists of a revolving cap provided with a vane which turns it away from the wind. Inside the cap is a tube with an exterior opening, through which the wind blows in the direction of the arrows. This current induces another current in an upward direction through the chimney, just as the



A NEW FORM OF VENTILATOR.

jet of steam passing through an injector carries along with it a stream of water. A more familiar illustration of the same principle is seen in the common perfume atomizer, in which a current of air, passing across the top of a tube dipping into the perfume, draws the liquid up through the tube, and blows it into a fine spray. As this form of ventilator is not dependent upon a current of heated air from the fire, it is also applicable to the ventilation of closed chambers, vaults, and similar places where offensive or dangerous gases are present. The principal disadvantage is that it does not operate in calm weather; but there are only a very few days when there is not sufficient wind to cause more or less air to pass through it.

Forcing Vegetables. *Rhubarb.* Litt some stools and pack them into square boxes or tubs, take to a convenient place and place round them some fermenting manure, and keep it dark. A spacious stoke-hole is a good place to force it and to dispense with manure. If this position should be adopted, care must be taken that the stools do not get dry, which they are liable to do in such a dry atmosphere. Leaves will answer the same purpose as fermented manure. After the stools have finished service in either of the before-mentioned places, they may be taken out of the receptacles and returned to their old quarters outside and covered with ashes. *Seakale*, too, is simple to force, and it is surprising to me it is not more extensively grown than is really the case. All that is required is to lift some plants, pack in boxes or tubs, and place them in a bed of fermenting leaves; drive a post into each corner of the box or tub, fix to that some wire netting, about two feet in height, and cover the whole with leaves, or a pit may be dug in the ground, sufficiently large to let in the box and some leaves to pack around them. *Mushrooms.* If a box is filled with ordinary stable manure, over that some soil, spawn it, and make firm in the usual way, it can either be placed in the stokehole or outhouse, and will do remarkably well; also, a succession can be kept up almost the year round by this treatment. *Asparagus* can also be successfully forced by filling a box with leaves, on which place some stable litter, and pack the roots upon this and cover with soil. *Peas*, if sown in long narrow boxes, the same width as the drills generally are outside, will be ready to put outside before the ones sown in the drills, if the spring is favorable. If not, place the boxes outside against a sheltered wall, and allow them to develop themselves in that position, where they will come in much earlier. The market gardener will find this method profitable with very little trouble.—London Horticultural Times.

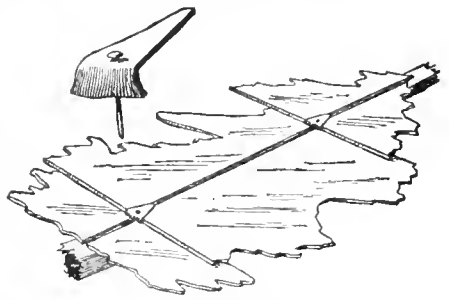
Preventing Fire-fang. To prevent manure from fire-fanging make holes in the heap and pour cold water in them. Manure must heat if it decomposes, and water will often hasten the process, but when it becomes so heated as to fire-fang the result will be a loss. Frequent turning over of the heap, which exposes it to the air, cools it. A pint of sulphuric acid in a pail of water sprinkled through the mass with some suitable vessel will decompose it and also prevent loss.—Practical Farmer.

Fertilizers for Strawberries. The Strawberry plants will begin to grow as soon as the frost shall be out of the ground, and now is an excellent time to fertilize them. A mixture of wood ashes and superphosphate is a special fertilizer for Strawberries. Hen manure in a fine condition may also be used, and should be scattered over the plants in time to be washed down by the rains.—Philadelphia Record.

Pruning New or Old Wood. The oldest wood should be taken off in preference to that which is newer. If a branch contains a strong, vigorous shoot, leave it and thin out to allow space for the future. New wood always bears the best fruit. When a Peach tree has ceased to bear, the cutting off of the old wood, or that which is partially dead, will give it new life and vigor. It will again begin to bear, and last much longer, provided the trunk is in good condition. The Grape vines that have grown to be as thick as a man's arm, sometimes begin to fail. Allow a young cane to begin at the root, train it as you would like to have it, and after it begins to bear cut away all the old vine and you will have a fresh, youthful vine that will begin to bear large quantities of Grapes, and you will thus have the advantage of new wood with plenty of roots as feeders. Encourage the growth of new wood. Many trees and vines fail because twigs and young wood are cut off, leaving the old, when the proper course should be to allow the new to grow and in time be substituted for the old. Farm, Field and Fireside.

Purifying Manure. We object to putting manure on our soil without being purified, and this is very important in all cases. Lime must never be used in doing it. Salt and soot are the two best purifiers, and a quantity of one or both should be used in all mixed manure heaps. The manure may all be mixed together first, then throw soot over the top and begin turning the heap over. As this goes on, throw more soot in the center, and work it in so that it will reach all parts. Salt may be used in the same way, only not in such large quantities, and if all who are troubled with worms in their soil, or at the roots of plants, would adopt this plan, they would very soon be gratified with the results. Journal of Horticulture.

A New Method of Glazing. It is practiced by W. A. Hammond, a florist of Richmond, Va. The rafters are plain bars, $2\frac{1}{2}$x2 inches without



A NEW METHOD OF GLAZING.

rabbets, the glass being held in place by small triangular pieces of sheet lead, one edge of which is bent over to hold the glass from slipping. A $\frac{3}{4}$-inch brass nail is driven (by a nail set with a hollow in the end, so it cannot slip) through the center of the lead, which holds the glass secure. The rafters are placed 16¼ inches from center to center—the glass being 12x16—which leaves a crack of $\frac{1}{8}$-inch on the bar, to be filled up with the white lead and putty mixture. This makes a very tight and light roof. Mr. H. states that broken lights can be very easily replaced, and that all outside painting necessary is two inches of the ridge pole and the ventilators; also that the method saves one-half in labor and putty over the usual way. The sheet lead used is what tinners call "3-pound lead"—that is, there are three pounds to the square foot. Zinc is too stiff.—American Florist.

Horticulture and Temperance. It is reported that of the several hundred people who attended the Autumn meeting in Boston of the American Pomological Society, none patronized barrooms. There is no better drink cure, we sincerely believe, than fruit eating. Liquids are not pleasant after eating fruit. Did you ever drink water after eating an Apple? It did not have a pleasant taste if you did. If the drunkard could be induced to eat plenty of fruit he would break the grip of this appetite. No doubt of it. The fruit eater, as a rule, is a man of excellently balanced character, who has good control of himself. Look over your fruit-eating acquaintances and see if that is not true. Western Rural.

Successful Pansy Culture. Pansies can be easily grown from the seed planted in pans containing a few inches of earth. Start them in the house from February to April, and if you have a cold frame, keep them growing in it until the warm days come in early spring; gradually let them become accustomed to the open air, and transplant into a bed somewhat later. If flowers are wanted in the spring months, give them plenty of sun and water; but if you want flowers in summer, and even until the ground freezes, commence picking off the buds as they appear, and keep the plants shady during the hot August days, and when September comes you will have a bed full of strong healthy plants whose blooms will delight your eyes as do few of our garden flowers. You prepare for them a soil composed of one part old cow manure, two parts good loam and one part of leaf mold, with a little sand thrown in; stir all thoroughly together, and some morning you will see your Pansies laughing at you as their roots penetrate far down into this rich bed. However, any moderately rich and thoroughly dug-over garden soil is quite good enough for you to become an expert in Pansy culture. Select for your bed some spot where the sun will strike the bed two or three hours in the morning and then leave it for the day, as too much sun burns the life out of plants and materially reduces the size of the blossoms. In selecting your seeds be sure and get some of the pure white, and also of jet velvety black. In setting out the plants, mix these together and a pleasing contrast will be shown as the blooms appear. As to the other colors, there are so many

different ones, of many shades and markings, it is impossible to enumerate them; the writer grew last season over thirty distinct varieties, each one a gem in itself. Be careful to purchase your seeds of some well-known dealer, as nothing is more disheartening than to have weak plants, of inferior blooms, that die easily.—Cottage Hearth.

The Forest Grove. When I went into Northwestern Iowa some 16 years ago, not a tree or shrub was to be seen for miles in any direction. Some eight years ago, my boys picked up and planted perhaps half a bushel of Soft Maple seeds. They grew quickly and are now trees 40 to 50 feet high, and six to eight inches through. Cottonwoods planted ten years ago are 50 to 60 feet high and eight to twelve inches in diameter. We planted in rows eight feet apart, putting the Cottonwoods,(the fastest growers), by themselves in the intermediate rows each way, to cut them out when of sufficient size, and thus give the Maples and Box Elders room to grow. We also planted White Ash, Elms, Catalpa, and European Larch. Except with the Soft Maples and Box Elders, we found it most desirable to plant out seedlings or sprouts as thick around as from the size of a pipe stem to twice that diameter. The land had been previously cultivated; and after the trees were set, we planted Potatoes between the rows each way. Of course, after the trees get large enough to shelter the ground there is no need of further cultivation. Every one can get enough seeds and sprouts for a small grove if he will only use the opportunities that occur. Start the soft-wooded, quick-growing groves first. Then, whenever you find opportunity, plant or transplant right in amongst these the more highly prized kinds. This is the method that Nature pursues.—G. W. B., in Farmer.

Vegetable Products on the Table.

Fig Pudding. One-half pound Figs, one-half pound bread crumbs, six ounces moist sugar, six ounces beef suet, two eggs, a little nutmeg, and one cup of milk. Figs and suet to be chopped very fine, mix all well and steam in a mold or steamer three hours.

Hot Slaw. Put finely shaved Cabbage into a stewpan, with a piece of butter and salt to taste. Pour in just water enough to prevent it from sticking to the pan. Cover it closely and let it stew; stir it frequently, and when it is tender add a little vinegar and serve it hot.—N. Y. Tribune.

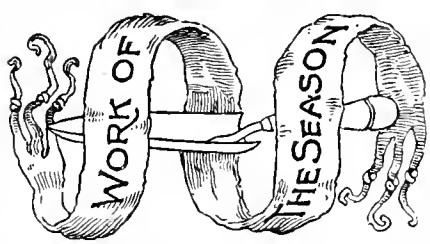
Potato Puff. Two cupfuls mashed Potatoes, two tablespoonfuls melted butter; stir these, with a seasoning of salt, to a light, fine, creamy consistency. Beat two eggs separately and add, with six tablespoonfuls of cream. Beat all together well and lightly. Pile in an irregular, jagged form in a dish. Bake in a quick oven till nicely colored.—Farm and Home.

Salsify or Vegetable Oyster. Of a number of ways of preparing Salsify or Oyster root, this is a favorite with us: Scrape the roots and boil until tender, in salted water, drain off all the water and mash very fine, then add one or two eggs, according to the quantity you have, dredge in a little flour, add pepper and salt and fry in butter. Another way: Scrape the roots, then grate them raw, and add eggs, pepper and salt and fry in butter.—Household.

Bean Soup. A New York Tribune correspondent's method is to soak a pint of Beans over night, boil them in a quart of water, with a lump of soda large as a bean, half an hour. Drain off the water, put in a quart of cold water, with half a pound of fresh lean beef cut up in inch-square pieces; boil slowly three hours, and as the water wastes add boiling water. Just before taking up season with salt. The liquor drained off makes a good dish for an invalid.

Farmers' Fruit Cake. Soak three teacupfuls dried Apples in warm water over night; in the morning drain and chop fine. Simmer two hours in two cups of molasses. When cold add a cup of brown sugar, half teaspoonful cloves, a teaspoonful cinnamon, half a grated nutmeg, a cup of butter, two eggs, a cup sour milk, four cups flour, and a large teaspoonful soda dissolved in three teaspoonfuls hot water, and a cup raisins dredged with flour. This will make two loaves. —Rural New Yorker.

Preserving Oranges. Choose fresh Oranges with a firm, smooth peel, and put them for a night into cold water. The next day they are boiled in a deep pan with much water fully half an hour. The fruit swims on the top, so one must be very careful, and with a spoon turn them often to have them alike throughout. The Oranges are then put into an earthen basin filled with cold water until cold and laid on a sieve or cloth during the night in a cold place. The next day the Oranges, without peeling, are divided into six or eight pieces, according to the divisions, and put into tin cans; finely powdered refined sugar poured upon them, so that they are quite covered, the lid soldered on, and boiled from twenty to twenty-five minutes. If the Oranges are put into glasses, they are covered with boiled sugar, which is poured away after a few days, boiled again, and poured over the fruit until the third day, when the glasses are corked and covered with bladder, which is tied on. Glasses have this advantage, that the contents may be taken out by degrees; when a tin box is opened it must be used up quickly.—Boston Transcript.



HOUSE PLANTS.

Begonia. The Weltoniensis, one of the best, should be cut down about this time, if unattractive looking, and given a dry-soil rest for six weeks.

Carnations Young plants for next winter's bloom should have much light and air, but not much heat, until planting out time, a month or two later.

Chrysanthemums. As young plants are obtained, they should be given a light airy place, to urge them on, the hot-bed being a very suitable place.

Dormant plants in the cellar or pits, such as Oleanders, Hydrangeas, Cactuses, Lantanas, Pomegranates, Laurestinus, and so on, that can be accommodated in the window, may now be brought in. Where room for them is lacking, they can remain at rest until the season allows of moving outdoors.

Gas. Its use for illuminating is a drawback to plant culture in the same rooms. If the plants can at night be cut off by partitions, or moved to unlighted rooms, it should be done. If not, harm may largely be prevented by capping them with paper covers, while the gas is lighted. Plants are better off, for being in rooms that are never lighted much artificially.

Geraniums propagated this month make the best plants for next winter's bloom. Grow in pots; keep down the flowers until fall.

Half-hardy plants kept in pits must receive plenty of air on the mild days now at hand.

Insects. Be vigilant in meeting these now, for at no other season do they naturally increase more rapidly, if once they get a start. It is well to keep them so scarce that the thumb nail remedy is all that is needed.

Oxalis are now at their best, provided they have plenty of sun; in the shade the flowers do not open.

Propagation. This is the most suitable season for general propagation. Cuttings of soft-wooded plants like Geraniums, Coleus, Petunias, etc., are now very readily struck in sand, in a light, warm place. Choose such slips as are neither over-hard nor yet very soft.

Richardia for pots should be started this month.

Shades provided for the sunniest windows during mid-day are a good thing. Primula flowers and Camellia plants especially receive injury if not shaded.

Soil for pot plants should be carefully prepared always. For this there is no better foundation than well decayed turf that is full of root fibers. Many plants would need nothing more; strong feeders should have manure added. Perhaps the soil that will best suit the majority is two parts decayed turf to one part of well-rotted manure.

Violets for winter bloom; treat as for Carnations.

Watering needs close attention at this time.

LAWN AND FLOWER GARDEN.

Beds and Borders. Such as are unoccupied to be heavily manured, this to be dug in deeply, allowing the surface to remain rough for the present.

Box Edgings should be taken up, divided and reset early in the spring. Plant deep and firm the ground well around the plants. Old edgings may be trimmed towards the end of the month.

Dahlias and Cannas. The varieties of these which it is desirable to increase may now be started into growth with a view to division later on.

Dutch Bulbs in beds and borders to have their covering gradually removed after the middle of the month.

General. Usually March weather is so variable that little work can be done in this department, but every thing should be had in readiness, so that if the weather is at all favorable, operations can be commenced.

Herbaceous Plants. Treat as for Dutch Bulbs.

Lawns. A thorough raking, rolling, and re-seeding wherever needed is work for as soon as the ground becomes settled. Ground for new lawns to be well and deeply prepared, and the grass seed to be sown as early as possible.

Manure spread around trees, shrubs, etc., last fall to early be dug under.

Pæonies. If large clumps are to be divided or new stock is to be planted, it should be attended to as soon as ever the weather permits, for these roots are impatient of late handling

Planting of ornamental trees, shrubs, to be proceeded with as soon as the ground is in a proper condition. The earlier these are planted after the soil is fit the better for their well doing later on.

Plants. Half hardy species as Penstemons, Euonymus, Aucubas, etc., that were wintered over in cold frames should be given air freely with a view of planting them out as early as possible in order that they may become well established before hot, dry weather.

Roses. The Prairie class is to be treated as advised for vines. If the weather permits the Hybrid Perpetuals and Moss may be uncovered, trimmed and given a good dressing of manure. The Teas and Bourbons being more tender should have only a portion of the covering removed this month. New beds and borders can be prepared, so that the ground may become settled before planting.

Shrubs to be trimmed, cleaned of dead wood, etc., while those that require support should be furnished with and neatly tied to stout stakes.

Vines. These may be trimmed and tied in their respective places by the end of the month. A dressing of well decayed manure may in early spring be worked in around their roots to great advantage. If more are to be planted see that the soil is both rich and deep, especially if they are to be placed near or under trees.

Walks to be early raked, rolled, and put in order.

PLANT CULTURE UNDER GLASS.

Achimenes. Some of the tubers should be started each month up to May for a succession of bloom When they show an inch or two of growth transplant into the pots into which they are to grow. The plants need heat, moisture and shade; they are a class well worth the attention of amateurs.

Begonias belonging to the ornamental-leaved class should now be having plenty of root encouragement to push them rapidly along in growth.

Camellias as they go out of bloom should receive a higher temperature, say 60° at night and a moist atmosphere, with shade from the sun's rays, for this is the season of new growth. Shifting into pots one size larger than before occupied should precede growth.

Cinerarias neglected but once to suffer from drought —and they now need much water—will show it very perceptibly in foliage and bloom. Guard against it by all means. Air freely. Use liquid manure often, nothing will help them more.

Double Primroses propagate now from slips.

Gloxinias. The directions for Achimenes will apply.

Orchids will require an abundance of atmospheric moisture now, and general attention to plants newly potted, and those coming into growth.

Palms. To raise from seed, sow all such now.

Pelargoniums need close attention. Air strong plants freely, and give liquid manure once a week.

Propagation of Coleus, Alternantheras, Heliotrope, Verbenas, Climbers and Droopers for summer use may still go on. Also of all winter flowering plants for the coming season.

Roses. Be not deceived by the brightness outside into admitting air too freely upon these, for this is a common cause of mildew. Air must be admitted, but when raw and chilly only in small streams and on the side away from the wind.

Watering. Now that growth is rapid, too much at tention cannot be given to watering. The houses must be gone over on every bright day with pot or hose, and some plants will even need looking after several times daily all through the spring season.

FRUIT GARDEN AND ORCHARD.

Blackberries. If new plantations are to be made the plants should be set out very early. Place them in rows six feet apart, the plants at two feet in the row.

Currants. In forming new plantations set the plants out as early as the soil works up well, and place them in rows four feet apart each way.

Cuttings of Currants and Grapes should be planted very early, of such kinds as it is desirable to increase. To take such off close to the old wood, they will be more certain to root than if made from long pieces cut up. Set at a depth so that but one eye of the Grape cuttings and two of other kinds show above the ground.

Fruit trees should be ordered promptly if not already done, for they should be planted as soon as the ground is in a proper condition. Unpack carefully as soon as they arrive, and if not ready to plant heel them in. This is done by opening a trench, placing the trees in it in a slanting position, covering the roots and half the stem with earth. Work the earth carefully among the roots. Here they will remain without injury for several weeks, but the sooner planted the better.

Gooseberries. Directions for Currants will apply.

Grafting may be commenced by the end of the month if there is much to be done, commencing with Cherries

and Plums. Scions to be cut at once if not already done. Root grafts to be set out as soon as the ground is in a proper condition.

Grapes. If not already pruned and tied up should be attended to at once. Young vines as well as those lately planted will be benefited by having a dressing of manure worked in around the roots. Vines laid down and covered last fall may be treated as advised for Raspberries.

Insects. There is no time for fighting some of our worst insect pests like early spring. Take the *Tent Caterpillar* for one, you can destroy 200 or more eggs (equal to that many worms later) as easily now as a single worm in June. Their nests encircle small branches of Apple trees near their ends and are easily seen. Cut out and burn. Early in the spring is the time that the female moths of the *Canker-worm* ascend the trees. The simplest preventive and destroyer is a tight band of tarred paper a foot wide, around the trunk, and kept painted with tar and printer's ink. To this the moths will stick and soon die. Renew this paint every time it becomes glazed over. Troughs of metal, filled with kerosene, are also used, and with less trouble, but the first cost is much greater. To scrape the trees of rough bark will take away the chance of the beetles of the *Flat-headed Borer* finding a secure place to lay eggs later. Do not scrape harshly.

Manure spread around trees, vines, etc., in the fall to be dug under promptly.

Pruning of all fruit trees and Grape-vines should be completed during the month and before the crowd of spring work comes on.

Raspberries. Directions for Blackberries will apply. Tender sorts that were covered with earth last fall may be lifted and tied up as soon as the weather settles.

Strawberries. Ground for new beds should be early prepared, remembering that the ground cannot be made too rich and deep. Plant as early as the ground is fit if possible, setting the plants in rows two and a half feet apart and one foot apart in the row.

THE VEGETABLE GARDEN.

Asparagus. As soon as the frost is out of the ground apply a good sprinkling of guano, cultivate and loosen the soil. Ground for new beds may be prepared, burying plenty of manure, as it can scarcely be too rich.

Beet. Sow in cold frames about the end of the month to succeed those sown in hot-beds. As soon as the soil will admit of working sow some in the open air.

Cabbage. Of the earliest sowings to be transplanted into shallow boxes and placed in rows two inches apart, and one inch apart in the row. Grow on in a gentle hot-bed for some time yet, giving plenty of air in favorable weather, securing from frost by covering up well on cold frosty nights. Plants wintered over in cold frames to be given an abundant supply of air at all times with a view to planting out as soon as the ground can be properly prepared.

Carrots may be treated as advised for Beets.

Cauliflower. Treat the plants as advised for Cabbage.

Egg Plant. Sow as early as possible in well drained pans filled with light loamy soil; place in a warm, moist situation as close to the glass as possible. As soon as the young plants are strong enough to handle, transplant into shallow boxes an inch and a half apart each way. As soon as they begin to crowd each other pot off into three-inch pots. Keep constantly in strong heat and moist atmosphere.

General. Weather permitting, ground should be prepared for all crops that are to be sown or planted next month so that every thing may be promptly proceeded with and the garden be early put in order.

Greens, Dwarf German. Remove the covering before the end of the month. Apply a sprinkling of guano and stir up the soil well between the plants.

Horse-radish. Roots in the ground to be dug soon. For another season plant as early as possible in a deep, well enriched soil. Use sets the thickness of a lead-pencil and keep them three inches below the surface. Avoid placing these sets with the lower end up.

Lettuce. Treat as for Cabbage. Plants wintered over may be placed in cold frames eight inches apart for successional crops.

Onion Sets, Potato Onions. Plant as early as the ground can be properly prepared in drills sixteen inches apart, the bulbs four inches apart in the row.

Parsnips. Roots yet in the ground to be dug as early as practicable.

Peas. Sow as early as the ground can be prepared. For the earlier sowings Thorburn's Early Market, Rural New Yorker or Carter's First Crop may be used. A week may be gained in earliness by sowing in moist sand, then placing in a box in a warm situation and sowing outside when sprouted.

Pepper. For raising plants treat as for Egg Plant.

Potatoes. For very early use should be sprouted before they are planted outside. Cut and place the sets in a hot-bed two weeks before they are wanted, then lift and plant out carefully. Or else place the sets in a warm, light situation a month before they are wanted. Set out on fresh horse dung, so that the heat will cause them to start at once. Early Sunrise and Early Ohio are among the most desirable for thus forwarding.

Radish. Treat as advised above for Beets.

Salsify and Scorzonera. Treat as for Parsnip.

Spinach. Treat as for German Greens. Sow for succession as soon as the ground can be properly prepared in drills fifteen inches apart.

FRUITS AND VEGETABLES UNDER GLASS.

Beets for early use may be sown and treated as advised for Radishes. Sow in rows six inches apart, and when up thin out to four inches in the row. The Early Flat Turin, and Early Egyptian are best for early.

Carrots. For early use sow and treat as advised for Radishes. The Moss Curled is best for forcing.

Cucumbers require attention to supply them with an equal temperature at all times. From 60 to 65° at night, with an increase of 10° by day, is most suitable for them. Earth up the plants at times and set the fruit blossoms as they open. Plants in newly-made hot beds require close attention as to airing. Seed may be sown in small pots, hot bed planting later.

Grapery. Vines swelling up their fruit should be given a good temperature and a humid atmosphere. Those in bloom require a little air, which should be given whenever possible, avoiding cold draughts. Be sparing of water until all the berries are set. With the increase of bright sunny weather late houses will require an abundance of air to keep down temperature.

Hot-beds may now be made at intervals for successional use. Early made beds may have the heat renewed by fresh linings of hot manure. These when vacant may be filled with Radishes, Lettuce and similar crops, while those newly made may be used for Cucumbers and other plants of a tropical nature.

Peaches and Nectarines. In forcing treat as for Figs. A fresh lot may be brought in for succession. Those in cool or slightly heated houses to be freely aired night and day, unless it is desired to apply heat later on.

Pines. Plants starting for fruit to be liberally watered and given a bottom temperature of 65, with 10 lower for top. Young plants will be the better for a little air to encourage stocky growth.

Radishes may now be sown in hot-beds in rows three inches apart. When up thin out to an inch apart in the row. Air freely, removing the sash entirely on warm sunny days. The Roman Carmine Turnip and the Blood Red Turnip are the best varieties for forcing.

Rhubarb may be readily forced from now on by placing kegs or half barrels over the plants and heaping fresh stable manure around them. Cover the tops of the kegs or barrels with boards.

POINTS ABOUT POULTRY.

Egg-Harvest Time. Don't neglect the hens at the close of winter and opening of spring of all times in the year.

Food for Chicks. The best food for chicks is composed of Corn and Oats ground together and cooked in milk, and broken crackers soaked in milk, using one-half of each. This to be given in a rather moist condition, with no drink whatever, for four weeks.—Rural New-Yorker.

Early Grass. Raisers of early chickens do well to remember that chicks must have grass food when 12 to 15 days old. If chicks are hatched before grass comes, then it must be raised artificially. A good plan is to sow oats in boxes in the kitchen window or greenhouse.

Scaly Leg. This is caused by a minute insect which burrows under the scales on the shanks of fowls, causing them to enlarge. This may be cured by dipping the shanks of those affected into crude petroleum, or a mixture of lard and kerosene may be thoroughly rubbed into the scales. Repeat the treatment in ten days, and the cure will be completed.—Practical Farmer.

Eggs for Setting. These should not be kept longer than two weeks after laying. If unmolested a fowl will lay a nest of eggs, and commence setting when the stalest eggs are only about a fortnight or three weeks old. Nature may generally be taken as a guide in such things; but the eggs kept for setting should be properly stored, and kept upright, or turned frequently. —English Farm and Home.

Ducks; the Gardener's Fowl. It is remarkable how rapidly duck-raising has grown to be an extensive business. It has been found that Ducks are a greater delicacy and far ahead of chickens as broilers. They command as high, if not a higher price, in the market than chickens. They can be hatched out by incubators the same as chicks, and are raised more easily, not being so liable to disease, require less care, and are ready for market when they are two months old, having twice the weight of chickens at the same age. The White Pekins are most in demand because they have no dark-colored feathers, and their flesh is the best-looking when dressed. In early market such ducks bring as high as fifty and sixty cents a pound. Next to the White Pekins are the Rouens and the Aylesburys. Ducks average about six pounds in weight. The best food is brewers' grains. They are great eaters. A poultry producer, at South Easton, Mass., raises the Pekin, but thinks a cross between that breed and the Aylesbury superior to either. His adult ducks are allowed a large trough, through which fresh water constantly flows, for bathing purposes. The number of eggs laid last year was 140 from each duck, they beginning to lay when five months old. The eggs were hatched in incubators.—N. Y. Telegram.

INQUIRIES AND REPLIES

This being the People's Paper, it is open to all their Inquiries bearing on gardening. Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Inquiries appearing without name belong to the name next following. Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

611. **Golden-leaved Syringa.** Can you tell me about this hardy shrub and where it can be bought?

612. **China Tree.** What treatment must the so called China Tree have, and is it hardy in the North? I think it is a Texas tree.—Mrs. E. A. B., *Erie Co., N. Y.*

613. **Peach Culture—Varying Results.** Wishing to plant 100 Peach trees, I am puzzled as to how to proceed, owing to my past experience on a smaller scale. Concerning this I will say that of ten Peach trees planted in 1882, six on the brow of a southern sandy slope, four at the base of the slope, all on land that had formerly been a truck garden, and all given since planting the same culture, fertilizers, etc., the former have grown perfectly, been free of borers, but have borne no fruit; the other four have been continuously treated for borers, the growth has been good and the crop immense. What conclusion am I to draw?—Subscriber.

614. **Wasps and Bees.** What means can I employ to save my early fruit from these.

615. **Pruning the Peach.** Must I cut away one-half of all the first year's growth no matter what length it may be, and when must this be done; in other words what time in the spring?

616. **Varieties of Peach.** Please give names of suitable varieties to plant, time of ripening, etc.—T. R. W.

617. **Grafting Several Sorts on the Same Tree.** Having but limited space in my garden I would like to increase the number of varieties of Pears and Apples in this way. Trees are not yet in bearing. Would this be satisfactory in the long run?—Suburban.

618. **Achimene Culture.** Please give particulars in regard to culture of Achimenes; soil, location, time to start bulbs, etc.—S. A. S., *Independence, Mo.*

619. **Growing Early Tomatoes.** I wish some one would give us a practical method of growing early Tomatoes.—A. M. N., *Granville, Ohio.*

620. **Heating Small Pit.** My pit is eight feet by twelve feet, and six feet high in center, with walk 22 inches wide, excavated between solid walls of soil, which serve as benches. Have tried lamps, but they are apt to get too high, and once or twice I have found the place nearly black with lamp fumes. Sometimes too from lack of Oxygen the lamps burn poorly. What can you recommend?—T. H. J., *Natick, Mass.*

621. **Sprouts for Stocks.** Will Pear sprouts do to bud or graft on?

622. **Pears on Light Soil.** I have a fine piece of very fine sand loam almost like molding sand. Will Pears do, or what kind would be the best? Peaches are very uncertain in our climate.

623. **How Many Seedlings.** How many plants will 10 pounds of Peach pits produce?—J. H., *Oregon.*

624. **Dog Nuisance.** In this neighborhood dogs cause great annoyance and damage in racing over my gardens. What can I do to protect myself?

625. **Fertilizer for Potatoes.** Will commercial fertilizers injure the Potato if dropped upon the seed?

626. **Wire for Pea Trellis.** Do you consider No. 30 wire heavy enough to train Peas upon.—A. R. Smith.

627. **Grape Queries.** (*a*) Of Ives and Champion which turns black so as to be marketable first, and about how many days is the leader in advance of the Concord? (*b*) Which of the three varieties named is the hardiest and most productive? (*c*) About how much earlier are Grapes that are grown on a south hill side than those on level ground?—H. B. *Cuyahoga Co., Ohio.*

628. **Pine Spines and Strawberries.** Are Pine spines, or straw as we call them here, injurious as a mulch to Strawberries to be put on in the fall and left until fruiting. My own experience has seemed to be variable, and I would like to hear from others.—Subscriber, *Benton, Arkansas.*

629. **Cloth Cover for Cabbage Plant Raising.** I intend to build a greenhouse for raising Cabbage, using oiled cloth for a cover if it will answer. How prepare the cloth, what quality is best?—J. G. K., *Buckners, Ky.*

630. **Amaryllis from Seed.** How long will it take the plants to bloom from seed. Should they be kept growing all the time?—M. E. G., *Los Gatos, Cal.*

631. **Raspberries for Fertilizing.** Will Turner or Marlboro answer to set in alternate rows for fertilizing Crimson Beauty? If so, which sort is best, and in what proportion to be used?

632. **Curculio. When to Poison.** In spraying Plums, Apples and Peaches, should it be done as soon as the blossoms begin to fall, or when?

633. **Insect Poison Proportions.** Please give the proper proportions of London Purple and water to use. Last year I got in too much purple and killed both leaves and Peaches.—Wm. H. Coms.

634. **Fruit Growing in Pennsylvania.** (*a*) I have a piece of land sloping southwest that I would like to devote to fruit. Can some one tell what kinds would be likely to pay best. (*b*) Which are the earliest Grapes suitable for market? F. S., *Hawley, Wayne Co., Pa.*

635. **Potato Seed.** (*a*) Where can I get Potato-ball seed for propagating new varieties? (*b*) What is the proper time to plant them.—W., *Sharon, Wis.*

636. **Roses for Winter Bloom.** Will some reader name the best sorts for planting out in a greenhouse of about 50° night heat? When is the best time to plant? —A., *William's Bridge, N. Y.*

637. **Cranberry and Huckleberry Culture.** How would it do to set these on Tamarack soil, and will you give points on cultivation?—L. M., *Genesee Co., N. Y.*

638. **Hen Manure for Grapes.** Will it answer to put this manure into the holes when planting. If so, how much? Would you mix ashes with it?

639. **Kniffen System and Laying Down.** Will this system, described in the January issue, admit of laying down the vines every winter?

640. **Grapes for Market.** For planting one-half acre here in N. E. Iowa, what varieties would you advise? What is the best distance apart to plant?—J. R., *Burr Oak, Iowa.*

641. **Wager Peach Pits.** Where could one-half bushel of these be procured?—L. W., *Hamburgh, Iowa.*

642. **Hibiscus Buds Dropping.** Will C. E. P. tell me why the buds of my Hibiscus rubra drop as if cut off by a worm, when almost ready to open. The plant is healthy, and no insects are in sight.—M. R. W.

643. **Grafting or Budding.** Which is better, root grafting or budding Apple? And why?—J. E., *Lyons, Neb.*

644. **Ashes for Peach Borer.** Can either leached or unleached ashes be used to bank around the trees, and what quantity to not injure the bark?—C. W. O.

645. **Fruits for British Columbia.** I would like lists of Apples for here, extra early two kinds, medium two or three kinds, late two or three kinds. Of Pears, Cherries, Peaches, Plums and Grapes, all about of a similar selection as to kinds as of Apples. Also of Blackberries, Raspberries, Strawberries, etc. Would like a small list of the best. Our climate is mild, the thermometer scarcely ever going 5 to 8 degrees below zero.—G. W. B., *New Westminster, B. C.*

646. **Celery in Sawdust.** Have any readers tried keeping Celery in the cellar packed in sawdust, and with what success and how done?—J. B. W.

647. **Blue-Black Grape Beetle.** Last spring a small beetle of this description ate the fruit buds of my Grape-vines, thus destroying the crop. What is it, and the remedy?—C. F. A., *Portage Co., Ohio.*

648. **Myrobolean Plum Stock.** Please inform me as regards this stock, and whether it is any better than the common Plum, or is used for standards, or as a stock for the Peach, etc.—F. M. S.

649. **Japan Persimmon and Peach Culture.** Can I grow the Japan Persimmon in latitude forty? also Kelsey's Japan Plum?—O. G. WILSON.

650. **Rabbits and Dwarf Pear Buds.** The rabbits have injured some buds of Pear and Quince stocks. Is there any way of making use of the stocks so deprived of buds?—YOUNG NURSERYMAN.

651. **Protecting Young Tomatoes.** What is the cheapest and handiest covering for the young plants to protect them from frosts and chills.—R. G. N.

652. **Early Tomatoes for Market.** I wish some one would give a practical method for bringing these along very early.—A. M. N.

653. **Chinese Primroses—Damping Off.** If some one will give me such points in their management as shall prevent this, I will feel obliged.—G. FLOYD.

654. **Seed Growing.** In addition to the answer to No. 524, I would ask: *(a)* Will you please say how they are grown? *(b)* Why is Cauliflower seed so expensive? From where was it originally imported? *(c)* Which is the earliest Pea of fine quality, good size and yield? —W. J. A., *Jamestown, N. Y.*

REPLIES TO INQUIRIES.

545. **Hardy Dianthus.** Your correspondent wishes to know of a hardy Dianthus, sweet scented and as fine as a Carnation. No doubt this was one of the florist varieties of Dianthus plumarius, which are perfectly hardy here and are so sweet, and beautiful in the markings, it is a matter of surprise they are not more grown. We have here besides the type some fifteen named English varieties, and they are much admired by all who see them in bloom.—E. ORPET.

548. **Shortening in Peach Culture.** Yes, the shortening in system as advised by Downing is being extensively practiced in this country, and with very satisfactory results. Not only does it prolong the life of the tree, but it enables it to produce good crops of fine fruit annually—that is if the trees are properly cared for in all other respects.—C. E. P.

572. **Pruning the Quince Tree.** The Quince requires but very little pruning, an occasional thinning out of the crowding or decayed branches being sufficient. Give your trees a good dressing of well decayed manure immediately, and fork it in well around the trees as early in the spring as possible. Thinning out of the fruit on overbearing trees will materially improve the remainder and enable the trees to produce fair crops every season.—C. E. P.

580. **The Niagara Plum.** The Niagara is perfectly hardy and bears an enormous crop of large showy fruit. The trees will bear as many baskets as the Lombard, but as the fruit is double the size it does not have to bear as many in number. It ripens 15 to 20 days in advance of the Lombard, and commands a much better price.

583. **Variegated Umbrella Palm.** This is *Cyperus alternifolius variegatus*, a semi-aquatic plant from Madagascar, of the easiest cultivation. Grow it in well drained pots in fibrous soil; keep it shaded at all times as you would a Fern, and give it lots of water at all seasons.—W. F.

516. **Cyclamen Treatment for Continuous Bloom.** The Cyclamen has an annual season of blooming and rest; the former cannot be lengthened much, and then only by the most favorable circumstances. Three or four weeks at the most may be said to be the limit. To secure continuous flowering the cultivator must have a number of plants, and give a part of them a longer rest, or induce some of them to rest at different times. By so doing a succession of flowers may be secured for several months. The rest, as some may suppose, should never be carried to a standstill, this is not in accordance with the nature of the plant. It should always have moisture and heat enough to keep the crown open and the roots moving, or its vigor will be lessened. The season of rest is indicated by the dying off of the lower leaves, and may be brought about at other times, after flowering, by the lowering of the temperature and the withholding of water. The drying off period is taken by some cultivators for repotting the plants; it may not be the best, but the soil is more easily separated from the matted roots, which require very careful handling or decay follows. The potting should be very firmly done and the cover set nearly or wholly above the surface of the soil. Overfeeding and overpotting are to be guarded against. Five or six-inch pots are the best size for flowering plants. Peat leaf-mold, loam, well rotted manure, and clean, gritty sand, in equal parts, makes a good soil for them.—P.

553. **Apple Geranium Culture.** The Apple Geranium should be given a compost composed of two-thirds turfy loam, one-third well decayed manure and a sprinkling of bone dust. In potting select porous or soft baked pots, and let them be proportionate to the size of the plant. Place in a light, sunny situation where a temperature of from 50° to 55° is maintained. Water thoroughly when necessary, and guard against the green fly, to which pest it is unfortunately very subject. Owing to the plant's peculiar habit of growth, it always forms the best plants when raised from seed, and which are freely produced. Plants raised from cuttings are not worth bothering with.—C. E.

558. **Pine Needles as Winter Covering.** Yes, they are excellent for covering bulb beds, but do not allow them to remain on too long in the spring.—C. E. P.

557. **Mildew on Roses.** Procure a bottle of Henderson's Mildew Mixture and apply according to the directions which accompany it. Or after syringing, blow virgin sulphur on and underneath the leaves with a powder gun or bellows syringe. To apply sulphur to hot-water pipes, mix it in water with equal parts of lime or guano to the consistency of whitewash. Apply with a paint brush, but don't use it too near the boiler.—C. E. P.

559. **Cherry Stocks.** Mazzard stocks are not the old Morello Cherry. You can procure Cherry and Plum stocks of many of the nurserymen who advertise in this journal.—C. E. P.

567. **Dissolving Bones for Making Fertilizers.** Don't waste your time and patience in attempting any such work, but if you intend to set out any Grape-vines or fruit trees this spring, dig the holes a little deeper and place the bones therein before planting the trees. Bone dust can be procured cheap if one requires it.—C. E. P.

560. **Pears that Ripen Well on the Trees.** All Pears are much finer in flavor if gathered and ripened in the house. The summer and autumn varieties should be gathered as soon as the fruit stalk parts readily from the branch on gently raising the fruit, while the winter varieties should be allowed to remain on the trees as long as possible, or until the nights become frosty.—C. E. P.

576. **Cotton Cloth for Hot-Beds.** Do not attempt to prepare anything of the kind, but procure Waterproof Fiber Cloth, which is far superior to anything that can be made at home, and is quite as cheap. The treatment that this Fiber Cloth receives fills the threads and fibers and preserves them from decay, and also renders it tougher and stronger and prevents it from shrinking after getting wet, and also sheds the rain to a considerable extent. As there is no linseed oil used in this treatment, the cloth will not stick together or heat when laid in piles. It is made in one yard widths, and can be procured in any number of yards desired, at a cost of about ten cents a yard. There are two grades, heavy and medium, the latter being the most suitable for general purposes.—C. E. P.

565. **Works on Grapes and other Fruits.** Fuller's Small Fruit Culturist, price, $1.50. Chorlton's Grape Grower's Guide, price, 75 cents. Fuller's Grape Culturist, price, $1.50. Quinn's Pear Culture for Profit, price, $1.00. Downing's Fruits and Fruit Trees of America, price $5.00; and Barry's Fruit Garden, price, $2.00; are invaluable to all fruit growers, and all may be procured through POPULAR GARDENING PUB. CO.—C. E. P.

566. **Applying Ashes.** Ashes can be applied at any time after the manure is put on, and before the crop is planted. Mix with the soil as thoroughly as possible, or use as a top dressing on the growing crops, applying it at the first hoeing.

564. **Works on Plant Culture.** Long's Home Florist is an excellent treatise for the amateur. Price, $1.25. To the professional cultivator, Henderson's Practical Floriculture, price, $1.50; and Henderson's Hand Book of Plants, price, $3.00; will impart a great deal of valuable information. These books may be procured through the POPULAR GARDENING PUBLISHING CO.—C. E. P.

577. **Bouvardias after Flowering.** Bouvardias are hot-house plants, and where flowers are wanted they must be given a light, sunny situation, and an average night temperature of 60 degrees, and the greatest care must be taken to keep them perfectly free from all insect pests. After they cease flowering, remove to a cooler atmosphere, and keep dry at the roots for a month or six weeks, when they can be started into growth again. When growth commences, shift into larger pots or give liquid manure twice a week. Care should be taken not to water the plants too much at first. The crop of flowers thus obtained will be far inferior to the first, and many persons consider it not worth the time and trouble necessary to obtain it. After growth has well commenced, the plants will require a similiar treatment to that advised for the early crop of bloom.—C. E. P.

590. **Lice on Fruit Trees.** I presume that you refer to the Bark Louse, which is a scale-like insect of a dull white color and about a tenth of an inch in length, which often appears on the stems of the trees in such numbers as to stunt their growth and even utterly destroy them. These insects may be destroyed by dissolving a pound of potash in a gallon of water and applying it with a paint brush to the affected parts at any time before the tree starts into growth. One, or at the most, two applications will destroy them.—C. E. P.

594. **Amaryllis from Seed.** Amaryllis seed should be sown, as soon as gathered, in a well drained pot or pan filled with light, turfy loam. Sow thinly, cover slightly and place in a warm place as close to the glass as possible. As soon as all are up and about two inches in height, pot off into two-inch pots and from this time on shift as often as necessary, as by so doing the bulbs will attain a flowering size in some twelve or fifteen months. Of course the plants should be kept in a warm, moist situation as close to the glass as possible at all times during their season of growth. They must be given porous or soft-baked pots, well drained; if the pots are one-third filled with drainage it is none too much.—C. E. P.

600. **Fertilizer for Raspberry.** Apply the Blood and Bone Fertilizer at the rate of two hundred pounds to the acre; spread it among the plants and work it in as thoroughly as possible, by means of a fork or hoe. A preferable way would have been to have given the plants a good dressing of well decayed stable or barn-yard manure last fall, and to have worked it in as thoroughly as possible this spring.—C. E. P.

596. **Plants for Small Conservatory.** There are but a very few plants that will bloom in as low a temperature as Geraniums. You may succeed with Hyacinths, Tulips, Crocus, Camellias and Azaleas in variety, Cyclamen Persicum, and Oxalis. A few well grown plants of the Jerusalem Cherry would be very ornamental in such a place. I would advise the free use of ornamental foliage plants, such as Anthericum vittatum variegatum, Colletia bictoniensis, Pittosporum tobira variegata, Aucuba Japonica Maas, and A. Japonica foemina, Eonymus Japonica aureus and E. Japonica argenteus, Osmanthus illicifolius aureus, and argenteus. Eleagnus pungens variegatus, Aspidistra lurida variegata, Olea fragrans and others. A few Palms could also be grown, such as Corypha Australis, Seaforthia elegans, Chamerops fortunii, Humilis and excelsa, Sabal adasoni and Palmetto, Cycas revolta. A few nice specimens of Deutzia gracilis, Forsythia viridissima, and Spireas of sorts could be taken up and potted in the fall, and would here give satisfactory results.—C.E.P.

602. **Coal Tar for Peach Trees.** I would not advise any one to apply coal tar to Peach trees for any purpose.—C. E. P.

603. **Plums in Sod.** Plums will not thrive when planted in sod, and if you do not intend to cultivate them properly from the start, I would advise you not to plant them.—C. E. P.

585. **Fertilizer for House Plants.** Dissolve a quarter of a pound of the best Peruvian guano in four gallons of water. Or soak some horse droppings or chicken manure in water until a clear, dark brown liquid is formed, or put four ounces of soot in a gallon of water, stir up briskly and apply. A thorough watering with any of the above once a week will be sufficient.—C. E. P.

604. **Shropshire Damson Plum.** This variety is far superior to the Old Blue, and will succeed equally as well. If the Old Blue pays, the Shropshire will pay far better.—C. E. P.

595. **Pruning an Arbor Vitæ Hedge.** The only objection to your reducing the height of your hedge, as you propose, will be that it will leave the center open, as the old branches that remain will not break and fill it up, as long as there are living and growing branches below.—C. E. P.

591. **Mortgages and Fruit Culture.** In my first experience in selling plants it was my custom to offer credit to such parties as I considered good, with the understanding and expectation that money could be realized from the plants to pay such bills in a year or two, but I think that in a large majority of such cases it would have been better on both sides to have done less business and made terms cash, and my advice is not to run in debt to any extent for fruit trees or plants, unless you thoroughly understand the business and the markets you expect to supply, and above all, unless you have more than ordinary business talents.—W. F. B.

597. **Propagating Hydrangea paniculata.** Sometimes green wood cuttings root readily in summer if inserted in a box or pot of sand and kept quite wet and wholly in the shade. In growing these, I generally partly fill the box with fine rich soil, into which the roots can go when they get through the sand. This plan, however, sometimes fails from too hot weather intervening before roots are formed. Layering is quite sure under favorable circumstances. Make the earth around your plant very rich and fine, and as soon as the young growth is a few inches long bend down and cover all but the ends of the shoots, pegging down if necessary, and all the young shoots will root. Early in the following spring these should be taken off and planted in nursery rows, in fine rich soil and the next season they will make nice plants.—W. F. Bassett.

552. **Wintering Pansies** Pansies require a great deal of fresh air, and for this reason are not usually satisfactory as greenhouse or room plants. A good cold frame, sunk a little so as to be somewhat in the nature of a pit, the side protected by banking with earth or pine brush, covered with sash and some provision for covering in very cold weather and nights, is the best place for them in this climate. Sow the seed early in August and transfer to the frames in September, making the soil very rich. Open the sash in all sunny days enough to ventilate freely, closing early in the afternoon, and covering with mats or shutters whenever it is cold enough to freeze the ground when not protected, and they will often bloom all winter.—W. F. B.

547. **Arbor Vitæ Hedges.** I find two feet the most satisfactory distance for hedge plants, and this should be adhered to without regard to size when set, although if different sizes are used it is best to plant those similar in size next each other. There is, as C. E. P. says, no particular difficulty in transplanting, yet a little carelessness is quite likely to cause a failure. Evergreen roots suffer much worse than other trees if allowed to dry, and it is therefore very essential that the roots be kept wet, and covered from sun and wind while planting, and also that the earth should be well packed around them by tramping quite hard after enough earth is thrown on to prevent bruising. When Hemlock succeeds it make a very much finer hedge than Arbor Vitæ. Prune before growth commences in spring, sloping the sides so as to narrow it about two or three inches to every foot in height, making a horizontal cut of one to two feet wide at top. It is best not to allow more than an inch per year increase in height after the hedge gets started.—W. F. B.

582. **Keeping Hibiscus Dwarfed.** I see no objection to old plants, as the flowers are all produced on the wood of the present season's growth and one or two buds is enough to leave of the previous year's wood, and some branches may be cut wholly away if required. Whenever a new tub or pot is needed, or the soil gets too poor, it may be shaken out, (while dormant), and, if desirable, root pruned enough to go back in the same pot, using fresh, rich soil, and it will be as good as new again.—W. F. Bassett.

583. **Variegated Umbrella Tree.** Cyperus alternifolius variegata is the botanical name of the plant you refer to, and it requires a treatment similar in all respects to that given the plain leaved variety, but as it is not so strong or rapid a growing plant it should not be overpotted. It also should be given a porous or soft-baked pot and this should be filled at least one-third with drainage. Give a light, sunny situation and an average temperature of from 40° to 50°, with water as required, and there will be no difficulty in growing the plant.—C. E. P.

582 **Keeping the Hibiscus Dwarfed.** About the first of May you can turn the plants out of their tubs, and after carefully reducing about one-half of their earth and roots, replace in the tubs, giving them good drainage and perfectly fresh compost. At the same time the tops of the plants must be cut back in proportion to the amount of roots removed. Water must be carefully given until growth commences. It is not advisable to place the plants in smaller pots or tubs. This operation can be repeated for any number of times, but in the case of such rapid growing plants as the Hibiscus it is best to have a young stock coming on to replace the older ones after they have had their roots reduced twice. Oleanders, to which you refer, and some other species, will stand this treatment far better than the Hibiscus, and some other plants of rapid growth.—C. E. P.

586. **Worms in Flower Pots.** Water the plants two or three times with lime water, then, as the worms come to the surface remove them. Watering with Tobacco water will also produce the same effect, besides, the Tobacco water is said to be an excellent fertilizer.—C. E. P.

627. **Grape Query.** *(a)* Champion both colors and ripens in advance of the Ives; the latter, however, colors a long time before it is really ripe. They are, both of them, too often put into market as early Grapes as soon as they are fairly colored, and while they are utterly unfit to eat, and calculated only to disgust the unfortunates who may be tempted by their attractive appearance to buy without first testing their quality. It is not of much consequence, whether the Champion is ripe or not, as it is abominable to a cultivated taste, and when fully ripened is only a degree less offensive than while green and immature. And although there may not be much choice between the two when first colored the Ives, by hanging two or three weeks longer and until perfectly matured, becomes quite eatable, especially for those who press the Grape into the mouth from the skin, and swallow the pulp without pressing out the seeds; as there is in a ripe Ives Grape a very pleasant and high-flavored juice next the skin, but the pulp is always rather hard and acid about the seeds. The Ives is not ripe as early as the Concord, though under similar circumstances it usually colors a little in advance. The Champion, I think, ripens ten days or two weeks earlier than Concord, under the same conditions of soil and cultivation. *(b)* There is not much, if any, difference in the hardiness of the three varieties named. If there is any, I think the Ives and Champion rather the hardiest against some winters, the Concord the most productive. *(c)* It is impossible to answer this question accurately, as much would depend upon the steepness of the hillside, shelter, etc., but there would probably be a few days, perhaps a week, difference in favor of the south hillside. —G. W. Campbell.

614. **Wasps and Bees.** In regard to a means for protecting the early fruit from bees and wasps, I would suggest covering the trees with mosquito netting just as the fruit commences to ripen. If the trees are kept properly cut back, this method, though it might prove somewhat expensive, strikes me as practicable.—E. S. G.

615. **Pruning the Peach.** The advice to cut away half of new growth take in general terms. In practicing it I am careful to preserve a fine form to the head, and at the same time remove about half of the last year's growth on the principal branches rather than to apply it literally to all the branches.—E. S. Goff.

586. **Worms in Flower Pots.** If they are the common Angle worm, simply remove the ball of earth from the pot in the usual manner and pick out the worms. If of the small white species, which sometimes infest flower pots, give the soil a thorough soaking with lime water, and repeat in two or three weeks if necessary.—G. H. M.

613. **Peach Culture, Varying Results.** The only reason I can suggest why the correspondent's trees, on the brow of the hill, did not bear, is that the soil which had been used as a market garden may have been too fertile, as I infer from his statement that the foliage and growth were perfect. Those on the lower ground were troubled by borers, which may have served to check the exhuberent growth, and so cause the trees to bear.—E. S. G.

635. **Potato Seed.** *(a)* It can be had of A. W. Livingston's Sons, 111 N. High Street, Columbus, Ohio, or W. W. Rawson & Co., 34 So. Market St., Boston. *(b)* Sow the seeds in a cold frame, or in boxes in the house about April first. Treat the plants exactly as you would Tomato plants, transplanting to the open ground in May. It is quite important to cover them for a week or two after transplanting, with some kind of a plant protection, as the Potato beetles are very likely to destroy them if left unprotected.—E. S. G.

636. **Roses for Winter Bloom.** For varieties I would name Douglas, red; Bon Silene, carmine; Papa Gontier, carmine crimson; Safrano, M. Falcot, saffron; Sov. d'un Ami, pink; M. Cusin, pink; Niphetos, white. A night temperature of 58 to 60° is necessary to attain the best results in winter blooming Roses. These varieties will do well at the temperature named, viz.: 50° at night. I would plant them out the latter part of July or 1st of August.—Chas. Anderson.

649. **Japan Persimmon and Plum Culture.** Yes, you can grow the Persimmon. But it will winter-kill, so that it is no use out-doors. Kelsey's Japan Plum is hardy here and will no doubt bear; but will not ripen with you. It takes the full season to mature them in latitude 35°. But there are several other of the Japanese Plums, some of which may ripen with you.—S. Miller.

650. **Rabbits and Dwarf Pear Buds.** When the Rabbits have eaten the Pear buds out of the Quince stocks, you can graft them quite low down, by the crown system, tie well and give each graft a stake as a guard. In the fall when taking such trees up, care must be taken to not break them off, as they will not be as strongly set as ordinary bud growth would be.—S. Miller.

628. **Pine Spines and Strawberries.** I have never tried the above, but know that no insects will breed in that mulch. I have covered plants with cedar branches in the fall, which shed all the leaves by spring, that done first rate. I don't think the pine needles would have any bad effect, unless put on too thick, which might retard the plants in the spring, as they are quite a non-conductor. The appearance of this will no doubt bring out the experience of others.—S. Miller.

636. **Cranberry and Huckleberry Culture.** There is no earthly use in your planting Cranberries on land that you cannot keep wet all the time. The fact is they must have their roots in soil constantly wet, and the water should be over the ground a little at various times. I have tried them repeatedly and failed. As to Strawberries, there will be no difficulty in growing them there. Plough deeply, pulverize thoroughly. Plant in rows three feet apart, one foot apart in the rows. Let each plant make about five runners, then stop all further runners. Mulch in the fall as soon as the ground freezes. In setting the plants spread out the roots instead of crammiog them in a bunch, as is often done. Cultivate all summer.—S. Miller.

640. **Grapes for Market.** I would plant, Concords 100, Ives 200, Tolman 100, Pocklington 40, Worden 200. Plant the rows seven feet apart and vines in the rows ten feet. Have the ground plowed and subsoiled at least 20 inches deep if you want a permanent vineyard. There are many better Grapes than the above, but in that latitude one must confine themselves to such as will stand the climate. The Ives is a much better Grape than it has credit for, being usually eaten before ripe. It makes a very good wine also.—S. M.

645. **Blue-black Grape Beetle.** It is the Grape beetle you allude to. The only way to prevent their mischief is to spray the vine with a solution of London Purple, one pound in 20 gallons of water. This must be renewed if there is much rain. Next best is to go along the vines in the forenoon cautiously, and you can catch most of them, hold one hand under so as to catch it in case it drops ere you can pick it off, crush them at once. If you watch the rolling of the leaves, you can crush the insect in the worm stage, as some say it is the young of the blue beetle. Whether it is or not, the latter is a regular nuisance, and should be carefully destroyed. It takes careful work, however, as when you unfold a leaf they begin to squirm and wiggle and make their escape to the ground.—S. M.

648. **Myrobolean Plum Stock.** Forty years ago I got the Myrobolean Plum Stocks, and at the same time some Chickasaw from this state. That was in Sharon Co. Pa. I could see no difference in the value as a stock. Here the Chickasaw and Common Wild Plum are all that any one could wish for. The former for the strong growing varieties and the latter for slower growing ones. I have the Wild Goose and Marianna grafted on the native wild stocks here, that keep pace in growth so that it is hard to tell where the union is. The Marianna will, I think, make a good stock, and it can be grown from cuttings. I never budded a Peach on a Plum in my life, nor do I want it. Peach is the proper foundation for Peach in the places where I have lived.—S. M.

652. **Early Tomatoes for Market.** My course, which has been satisfactory, is as follows: Between February 22 and March 1 I sow the seed in shallow boxes filled with good soil, and, when the plants are several inches high, and before there is any danger of injury by over-crowding, they are transplanted, preferably into beds of rich soil, two inches apart each way. Here they should push forward rapidly, receiving at the same time abundance of air to prevent a weak growth. I transplant again before crowding injures them, this time singly into boxes four inches square and three inches deep, the sides and bottom being 3-16-inch stuff, the ends having a thickness of ½ inch. The sides are fastened only enough to hold and yet admit of being pulled off when taking the plants from them for planting. These boxes, with ordinary care, last three or four years and have proven to be about right. The plants in them are grown along as quickly as possible, without causing a spindly habit. A good supply of water is essential, and close attention at this stage to the airing, and giving increased space promptly as required. About the middle of April they may be put outside in frames, protecting with prepared cloth, and in this way securing extra strong, well-hardened plants, that by the last of May can, with us, be planted outside, in well-tilled but not over-rich ground. With exercising the care required to secure early products, Tomato plants grown in this way will have on small fruit, as well as blossoms, when planted, and these produce the early crop of fruit, after which a new crop must form that will ripen during the summer. In order to have the best possible results as to earliness, one can not well get along without a greenhouse of some sort, in which the work early in the season can be carried on. From four to five months are required from the time of sowing the seed to have sufficient ripe Tomatoes to begin the marketing, and it seems as if no amount of forcing would hasten the crop. My experience with starting them earlier than the date named, has been that the gain did not repay for the increased expense of time, space and care required during the dark weather. The varieties that have given the best satisfaction are Livingstone's Favorite, Perfection, and Beauty, no great difference existing in the time of ripening of these in plants grown as above.—Geo. Summey, *Buffalo, N. Y.*

587. **Musk Melons for Forcing.** The best for this purpose as asked for by your correspondent is only determined by what purpose the product is intended, as any of the varieties as far as my experience goes are equally adapted to forwarding in this manner. If for home use, where quality instead of quantity is the desideratum, then try the Emerald Gem or Miller's Cream, which are A No. 1 in this respect, but too small for market generally. If for the latter purpose, try such sorts as Burpee's Champion Market, and the New Early Hackensack for green fleshed, Perfection or Improved Orange Christiana, for yellow fleshed. The seeds are sown about April 1st in a greenhouse or hot-bed, six or eight in a five-inch flower-pot, sufficient for one hill, afterwards thinning to three or four of the strongest. These are allowed to grow in this manner till such time as the weather will admit of their being set in the open ground, which is done as follows: After thoroughly preparing the land, mark the location for each hill, take one of your jars, invert it, and gently tap the edge, when the contents will come out intact without the least injury to the working roots, the essential point in the operation, and can then be planted in the hill, and will grow without any apparent check. This plan will insure Melons considerably earlier than from seed sown in the open ground, but if the maturity of the crop at the earliest moment is the desired point, it will pay to still further protect each hill by a box or frame covered with water-proof fiber cloth set over the same. Cucumbers may also be forwarded in the same manner, with generally a considerable profit.—G. H. MABAN.

573. **Fertilizer for Strawberry.** Not knowing the size of your bed, I am unable to say why the guano did not help it. I infer from your query, however, that the ground was improperly prepared before planting, and if so, would advise you to plant a new bed this spring, and to destroy the old one as soon as the crop is gathered. In preparing for a new bed, apply an abundant supply of good, well rotted stable manure, and work it in as deep and as thoroughly as possible, remembering that to ensure a satisfactory crop the ground cannot be too well prepared or made too rich and deep.—C. E. P.

574. **Fruit for Small Plat.** Bartlett, Duchess d' Angouleme, (on Quince), Beurre d' Anjou, and Lawrence Pears. Duchess of Oldenburgh, Peck's Pleasant, and Baldwin Apples. Columbia, Duan's Purple and Washington Plums.—C. E. P.

588. **Storing Cabbage.** When it is deemed advisable to secure the crop, pull up on a dry day and place the heads in a downward position so as to drain all moisture from them, then place in pits, roots inward, as close together as possible, and gradually cover with earth to the depth of eight or ten inches. One or two hundred heads can be placed in each pit. A covering of coarse litter placed on one side of the pit will render access much easier if applied as soon as the ground commences to freeze. These pits should be formed and finished precisely as those used for storing Turnips, Carrots, etc.—C. E. P.

642. **Hibiscus Buds Dropping.** I am not acquainted with Hibiscus rubra. I suppose you refer to H. rosea sinensis, and if so would say that the plant is not sensitive about being touched while in bud, except to the extent of the expanded flowers being ill-shaped in the event of the buds being bruised or severely injured. No insects or worms are injuring the buds, and you may attribute the dropping of the buds to one or more of the following causes: The plants may be growing in too low a temperature. The pot or tub may be improperly drained, and in consequence of this the roots may have become injured by being kept too wet. Or in the event of the pot or tub being well filled with roots, the plant may not have been thoroughly watered at times. To grow and flower this Hibiscus successfully during the winter season it should be given a light, sunny situation, and an average temperature of from 55 to 60 degrees. Water thoroughly whenever necessary, and if the pot or tub is well filled with roots give liquid manure once a week. A compost composed of one-third well decayed manure and two thirds turfy loam is the most suitable, and the tub or pot must be well drained. Re-pot the plant in May, or before placing it outside for the summer. Do not give it too large a pot or tub, and never shift or re-pot it in the winter or fall months.—C. E. P.

651. **Seed Growing.** Full particulars as to how seeds are grown will be found in Brill's Farm Gardening and Seed Growing, which can be procured from the office of POPULAR GARDENING. Price, one dollar. (b) Cauliflower seed is imported from Europe. It requires a cool, moist climate, and even under the most favorable conditions seeds perfect very sparingly; this is why it is so expensive. (c) Alpha is the earliest pea of fine quality with which I am acquainted. It yields well and is of good size. It is a wrinkled marrow and should not be sown until the ground has become warm, on account of liability to rot. For the very earliest sowings I prefer Thorburns' Early Market, or Rural New Yorker. The Alaska is recommended as a very early blue Pea of good quality, very productive. I cannot speak for it from experience.—C. E. P.

The Fire Hot-bed at the Michigan Agricultural College.

C. S. CRANDALL, AGRICULTURAL COLLEGE P. O., MICH.

Our fire hot-bed was not alone a hot-bed, but combined a small forcing house where we could work under the glass, and a hot room twelve feet square. Figure 1 shows depth of excavation and position of furnace.

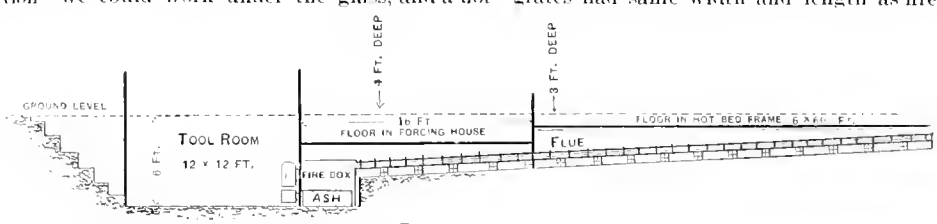


FIG. 1

LENGTHWISE SECTIONAL VIEW OF FIRE HOT-BED.

The hot-bed, six feet by sixty feet, was excavated full width, one foot deep at the chimney end and three feet at the other, and was fitted with frame same as for an ordinary bed. Then narrowing the trench to two and one-half feet it was continued twelve feet to the furnace, where it was lowered to six feet from the surface, and continued on this level for furnace bottom and tool room floor. Seen from above the excavation would appear as in Figure 2.

The dotted line indicates the outline of forcing house portion. This was 11 feet wide. The outer walls consisted of pieces of 2x4 inch scantling set into the ground, boarded on both sides, and the top capped with 2x6 inch scantling, on which rested the rafters and sash. These walls projected above ground about eighteen inches, and were banked to the top on the outside with earth. Upright pieces of scantling placed against the sides of the trench served as supports for the rafters. Five sash were used on each side. The adjoining tool room wall formed one end, the other was double boarded down to the hot-bed frame, with which it was connected.

The trench was boarded up as high as the ground level, and the bottom floored over a few inches above the flue, thus forming a passage between the beds. The beds were covered with boards, and on these we placed our seed and plant boxes. In the hot-bed frame the floor made of inch boards was laid level, being close down to the flue near the chimney end and nearly two feet above it at the other end. The sides were extended above the floor fourteen inches in front and eighteen inches at the back, giving slope sufficient to carry water off the sash. At intervals of six feet and alternating from side to side, spaces were left between the floor and the sides for the passage of warm air to the plant space above.

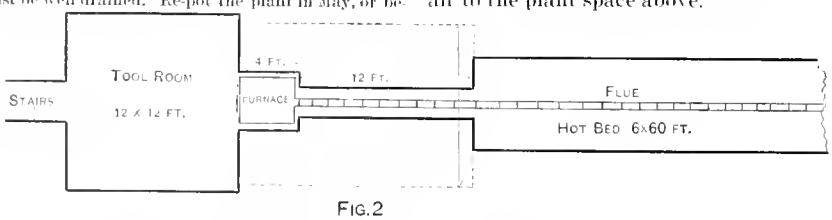


FIG. 2

GROUND PLAN OF FIRE HOT-BED.

On a portion of this floor earth to the depth of eight inches was placed, and some seeds sown here, but nearly all our plants were started in the forcing house in boxes, and as it became crowded the boxes were transferred to the hot-bed, placing the tender sorts at the end nearest the furnace; but Cabbage plants, etc., near the chimney.

The tool room, used also for storage of coal and a ground work room was walled with brick, and covered with a shingle roof. The furnace was built of brick. An arched top iron frame carrying doors to fire box and ash pit formed the front, and was set even with the inner face of the tool room wall, and held in place by rods built into the furnace wall. The fire box, lined with fire brick, was thirty inches long, fifteen inches wide, and eighteen inches high in the center. The ash-pit, eight inches deep below the grates had same width and length as fire box. We used a single flue of six inch sewer pipe running straight from furnace to chimney. This was supported on brick four inches from bottom of trench, and the joints were made tight with fire-clay and mortar.

On starting this hot-bed we found a difficulty in the excessive radiation from the flue joints nearest the furnace. This was obviated by encasing the first twelve feet in an outer brick flue which was allowed to open into the air chamber under the hot-bed. The dryness of heat obtained by this method of heating renders necessary the maintenance of pans of water over the furnace and at intervals along the flue. The experience of the year proved so clearly the utility and convenience of our forcing house that we removed the hot-bed frame and converted the whole length into forcing house, excavating full width of eleven feet and running two flues, one under each bench.

Plants can be successfully grown in fire hot-beds, and in many cases at less expense than in manure heated beds, the fuel costing less than manure. For a forcing house such as I have spoken of, the same sash, the same furnace and flues required for a hot-bed can be used. The only difference is in the additional lumber necessary for the frame, and the extra labor of construction. So I would suggest to anyone contemplating a fire hot-bed that they carefully calculate the cost of both hot-bed and forcing house, and then do not let a reasonable difference in cost prevent you from choosing to build the forcing house. Very many cheap houses of this character, varying somewhat in construction according to the taste and means of the owner, are being built every year. Their utility has been demonstrated, and their cost is within the means of gardeners who now depend entirely upon hot-beds.

ROADSIDE TREES IN BELGIUM. From the official report of the head officer having charge of woods and rivers in Belgium, it appears that the total length of highways in that country amounts to 4,227 miles, of which there are already planted more than one-half, or 2,417 miles. The present value of the trees is now four times as much as their original cost, or have a money value of more than two million dollars. Among the trees thus planted, Elms are in the largest numbers, then Oaks, next Poplars, and in diminishing numbers are Ash, Beech, Maples, Norway Spruce and Larch. Fruit trees are in much smaller numbers.

TRICKS IN ALL TRADES. The Cincinnati Commercial Gazette exposes a neat scheme practised to stretch out the crop of "Florida" Oranges. It says: "The choicest Orange has a dark tinge upon its rind. But the ingenious Dago, being well aware of this fact, artfully arranges that all of his Oranges are Floridians, presenting the darkskinned appearance. And after the Florida Orange passes away there takes its place as the choicest feature of the market the little blood-red Orange, sweet and juicy. These the artists get by inserting in the neck of a white Orange a tiny glass syringe filled with sweetened analine dye."

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. APRIL, 1888 No. 7.

Springtime is here!
Stout March, with his bluster,
Has well cleared the way
For sweet, tearful April
And sunny-faced May.
Old Winter's grim forces unwillingly retreat,
The long prisoned streams their deliverer greet,
The sun rises early, the squirrels dodge out,
The brave pussy-willows take courage and sprout!
From Winter's cold heart
Nature wakes with a start—
Fair springtime, rare springtime, blithe springtime is here! —*Good Cheer.*

BULB BEDS. The beds of spring-flowering bulbs should have their surface stirred with a rake once or twice before the time of bloom.

ADVANCE ON THE WEEDS. Cultivation is easier done before a crop is planted than after, and labor spent in fitting the soil in the best possible manner before the crop is planted is so much done towards its cultivation. Herein lies one of the advantages of small areas of crops: more time can be spent in fitting the soil before planting.

PROTECTION AGAINST HAIL. Something less than a year ago the Florists' Hail Association was established. It has been in practical operation most of the time since, and during last year paid a number of claims for losses. It is desired by the directors that all who feel an interest in this protective work will co-operate with the association by joining it without delay. A first step should be to procure the constitution and by-laws with application blanks. These, together with all necessary information, can be had by addressing Secretary John G. Esler, Saddle River, N. J.

ARBOR DAY. The interest in the Arbor Day and School Yard Improvement movements is so rapidly on the increase that we are sure the special attention given to these subjects in the present issue will be widely appreciated. These matters are of such vast importance to the welfare of our country, and the season of planting is so brief, that we feel to urge the utmost promptness, vigor, and, need we say also, unselfishness in the carrying out of such improvements. Every friend of trees should be ready to give, not only one day of the year to the setting of forest and ornamental trees and shrubs, but what may often help even more, be prepared to pay out a little money for the common good

CHEAPER POSTAGE FOR SEEDS, ETC. FRACTIONAL CURRENCY. At this writing the prospects of a reduction in the postage on seeds, plants, bulbs and scions, to one cent for each four ounces (four cents a pound) look very favorable. The Senate postal committee has reported favorably on such a bill, and while a majority of the House committee favors fixing the rate at one cent for each two ounces, a strong minority concurs with the Senate committee in favor of a lower rate. An added argument in the same line is furnished by the postal treaty with Canada, in effect March 1, by which seeds and plants can be mailed from there to any part of this country at a four cents per pound rate, while we have to pay 16 cents. The duty on seeds, plants, etc., is small (a pending bill repeals it) and if we are to compete with Canada, we must at least have as low postage. The bill for the issue of Fractional Currency in 25, 15 and 10 cent denominations of silver certificates passed the House on March 19, by the extraordinary majority of 177 yeas to 67 nays. With these denominations, any combination on five can be made, so that they cover the necessity of fractional currency for use in the mails. But neither of these important measures has yet fully become a law, hence we again urge every one of our readers to write to their Representatives and Senators, asking them to do all in their power for securing the passage of these bills.

Horticultural Notes by Samuel Miller, Montgomery Co., Missouri.

EARLY MELONS. To have this delicious fruit at least two weeks earlier than by outdoor planting, start on sods six inches square and three inches thick. Cut the sods of exact size and put them in a box five inches deep, sticking a little peg in the middle of each sod, then cover half an inch with rich, mellow ground; stick the seeds around this peg an inch from it, four or five to each. Then cover an inch with good soil, pack down tight and place the box in the hot-bed as early as practicable. When the plants are up and starting the third leaf fill up to within an inch of the leaves. By the time that the ground and weather is fit to plant in the field these will be ready to run. Carry the box to the field where to be planted, cut down with a thin sharp knife between the rows, and lift the plants out carefully and set in the hill, leveling up and pressing the ground firmly around them. Do this in the evening and the plants will hardly feel the move. Be sure, however, to temper the plants to the sun, so that they can stand the full rays for several days before taking them out. When they have well started pull up all but the two best plants. Of course the land to receive them must be rich and in good mellow condition.

PLUMS AND NUTS WITHOUT PLANTING. I have been clearing land lately upon which there are handsome Plum and Hickory trees. These are left standing for the purpose of grafting—the Plums with such varieties as do well; and the Hickory with choice Hickory nuts and Pecans. The latter we now know will grow on Hickory. Have now two grafts grown on Hickory of Nussbaum's Hybrid Pecan, a peculiar, and, in my opinion, a very valuable nut. In a few years these will bear when grafted on young Hickory, which will beat planting the nuts or young trees. I would advise those who are clearing woodland upon which there are thrifty young Hickories, to let them stand for the purpose of grafting Pecan or good varieties of Shellbark upon, which will in a few years be as valuable as any other kind of orchard.

MULTIPLYING POTATOES. When these new brag varieties come out, for which we pay from 50 cents to $1 per pound, it is an object to make the most of them. To do this treat them same as we do Sweet Potatoes, taking off the sprouts when six inches high. The first Early Rose Potatoes I ever got were seven medium sized tubers, from which I took the sprouts, then cut these up and planted each piece that had an eye in it. The result was just three bushels of splendid Potatoes. In taking off the sprouts be careful not to disturb the Potato's germ.

HEADING BACK PEACH TREES. A private correspondent tells me that in heading back Peach trees to the bud, that there was a material difference between those cut back when the ground was frozen and those done when the frost was out; the latter always making a better growth. And then asks whether the pruning of Grape-vines when the ground is frozen may not have an injurious effect. I think not, unless the wood of the vine is frozen at the time, as the cutting is too far from the ground to have any effect. The Peach buds are usually inserted but a few inches from the ground, which if frozen must hold the tree in nearly the same condition, besides if the trees are headed back so early the stock dries back so as to diminish the vigor of the buds. I never head back to buds when the ground is frozen, but have often pruned vines when so, but on mild days when the wood upon the vines was thawed out I cut them closer.

GRAPE GRAFTING. As regular as the season comes around I am asked to describe the mode. By the time this gets before our readers some who are in a hurry may have already done the work. After many years of experience, doing the work at all times from February, when the frost was out of the ground, until the vines have made shoots a foot long, with varied success, I have come to the conclusion that the best time is when the vines are started to grow, the grafts being kept in a cool shady place so that they were a little behind the stock in starting. To keep them entirely dormant in an ice house, as some recommend, is wrong. I have had the buds on the grafts swollen ready to burst when inserted that started to grow in a week after. Clear the ground away from the root three or four inches deep, saw off at a smooth place at the bottom. If no smooth place can be found, saw into the stump instead of splitting as usual. A thick, wide-set saw I prefer to the knife, even in a straight stump. Shave your graft to fit the cut with a shoulder, tie if the stock is less than an inch in diameter, then fill in the earth carefully, press firmly, but do not move graft. Hill up to the upper bud, stick a peg one inch from each graft on one side, always on the same, so you can tell exactly where the graft is. Then cover the eye over with a handful of sawdust; throw a little mulch on and leave it until the grafts begin to grow. I use two-eyed grafts, unless the wood is long-jointed and thick, when one eye will answer. When the grafts begin to grow the suckers must be kept off, or they will keep the grafts from growing. As soon as the graft begins to grow it must be tied up to a stake to keep the wind from blowing it down. In this way I nearly always get fruit a little sooner than when I buy a small vine. Have now strong vines of Empire State that were set in spring of 1886; bore fruit last year, while three vines planted the year before that cost me six dollars have not borne a bunch of fruit yet, and not much show of doing it the coming season. I cannot see the policy of digging worthless vines up and planting others in their place. Graft them with something better.

GRAFTING WAX. How to make this is often asked, and while there are many receipts given, the one that I like best after forty years of experience is made as follows: Use 1 pint Linseed Oil, 4 lbs. resin, 1 lb. beeswax. Melt all over a slow fire; stir well and pour on water, when cool enough to work grease the hands well and work it like shoemaker's wax or taffy. Then roll balls of convenient size for putting into the vessel used when grafting. It should be heated over a moderate fire and put on the grafts thin, but not too hot. This wax will not crack in cold weather, nor run, even if the weather gets up to 100 in the shade.

Ornamentation about Country School Houses.

BY L. H. BAILEY.

No one can doubt the need of ornament about country school houses. The only moot points are those of the methods and principles to be employed. It is a comparatively easy matter to render a school ground fascinating if the operator has the chance of selecting the site and placing the buildings. These privileges are rare, however, and it is the purpose of the present contribution to suggest methods of making old grounds attractive. The suggestions are made solely for the country school, the "district school." These are of all school grounds the most difficult to ornament satisfactorily from the facts that there is apt to be little or no co-operation in the labor of ornamentation among the residents of the district; that the utmost economy must be practiced, and that the ground are usually very small and lacking in natural attractions. Whatever adornment is attempted must be of the simplest and most permanent character to find sympathy at the hands of patrons. The following suggestions, therefore, may possess value in this connection:

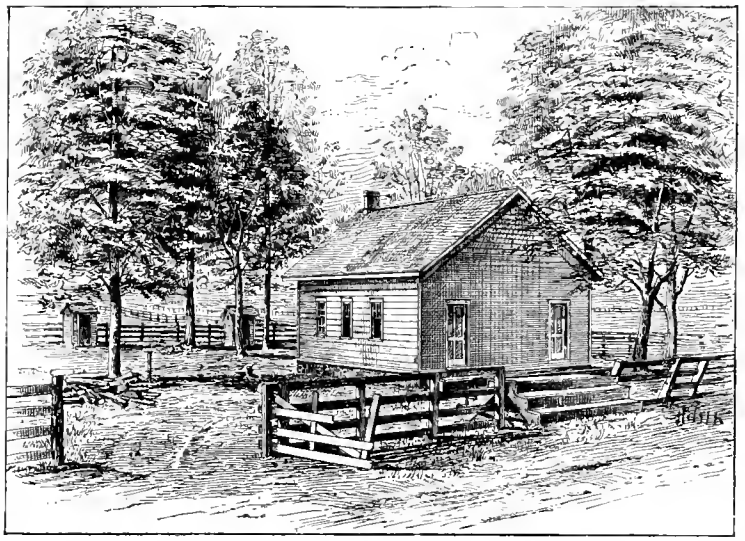


FIG. 1. A COUNTRY SCHOOL HOUSE. FROM A PHOTOGRAPH.

1. *Grade as little as possible.* Grading is not only an expensive and burdensome operation, but in the hands of an unskilled operator is usually productive of harm by destroying the pleasing natural undulations of the surface. Beyond filling up mud holes and tempering very abrupt irregularities, grading should usually be discouraged.

2. *Definite walks and drives should be few, or altogether absent.* They are expensive if well made and well kept, and if poorly made and poorly kept they are a nuisance. Most country school premises are too small for both walks and drives with definite borders and directions. A carriage entrance, usually more or less indistinct, may swing past the entrance of the house in the larger grounds. Such a drive would be necessary and unobjectionable in Fig. 2.

3. *Make no mounds, and insert no ornaments of an uncommon character.*

4. *Use largely of native plants.* They are cheap; they are hardy and vigorous, requiring no petting. The children should know them, become familiar with them. The list of desirable native trees and bushes is a long one. It would be useless to specify the species here, for most people do not know them by name. Select a good variety. Every swamp and thicket can be laid under contribution. Any bush or tree becomes attractive when given a chance. Select plants which are handsome in leaf and habit as well as in flower. A liberal admixture of evergreens is desirable, yet they seldom thrive well about school grounds. They are too apt to be injured by romping boys. Their tender shoots are also in great demand among the girls for trimming their hair and garments.

5. *Flower beds should be few or none unless the children themselves care for them.* The reasons are obvious. When the children can be induced to save the seeds and care for the plants, danger from depredation is largely reduced, and the beds can be kept in an attractive condition. A neglected flower bed is much worse than none. During the mid-summer season, broken by a long vacation, the flowers would be neglected.

6. *Use many shrubs.* The use of bushes is not appreciated, even in cities. They are quick in reaching maturity, easy of transportation, eminently adapted for screens, and, by their size, especially suitable for small grounds. If plantings appear to be unsatisfactory after a few years, the shrubs can be readily transferred to other parts of the grounds. They are always manageable.

7. *Prepare the ground thoroughly before any planting is done.* In setting groups of shrubs it is desirable that the ground should be turned the fall before. If the soil is light turn under stable manure. Dig large, ample holes in which to set all plants. Set with care. If possible, give some cultivation for a few feet about each tree or bush for two or three years. This can be performed with a spade or hoe.

8. *Plant the borders of the grounds with shrubs.* Such planting has the effect of setting the school ground apart from the surrounding fields and renders it snug, cosy, attractive. It hides the boundaries, which are usually marked by shameful fences. The plantings on the borders should be irregular, somewhat clumsy, jutting in and out. Occasional openings should be left to allow of views, passage ways, and to relieve the monotony which would come from a continuous hedge. Figs. 2 and 5 give diagramatic representation of such plantings about the borders. Plant the bushes thickly in these groups, use many kinds, mixing them in. If they grow into a wild tangle, so much the better. Let the plantings average at least ten feet in width, becoming twice or three times as wide in a few places.

9. *Hide the out-houses.* Compare Figs. 1 and 3, 4 and 6.

10. *Divide the grounds by plantings of shrubs.* This separates the boys' and girls' playgrounds, and breaks the monotony of the premises. Study Figs. 2 and 5.

11. *If the school building stands out baldly break its monotony by trees, groups of shrubs, or vines.* Fig. 3 illustrates this improvement upon Fig. 1. The building in Fig. 4 stands so close to the road that plantings cannot be made in front of it. Vines answer the same purpose. Virginia Creeper is the best vine for this use. Do not be afraid of harm to the building by vines.

12. *Remove the fences or keep them in repair.* Note the improvement in Fig. 3 over Fig. 1 in this respect.

Figures 3 and 6 represent the improvement which can be made in small grounds by the use of shrubs. In these instances there were enough natural trees for the purposes of ornamentation. These trees are shown in diagrams of Figs. 2 and 5 by the shaded disks. In the first example the grounds are about 260 feet square. A drive is essential in this case. This drive also serves as a path. In the second example the grounds are less than 150 feet square, and, like the former example, lie upon a corner. The house is so near the highways and the grounds are so small that plantings cannot be made upon the two outer sides. The boys use the roadside for a playground, and it is therefore included in the school grounds by the absence of planting. It is usually desirable to make somewhat of a separation between the front and rear grounds. This sets off the rear play grounds and screens them somewhat from the street. If the playgrounds are somewhat shut in there is usually less annoyance to travelers on the highway. Such separation is indicated on the left sides of Figures 2 and 5.

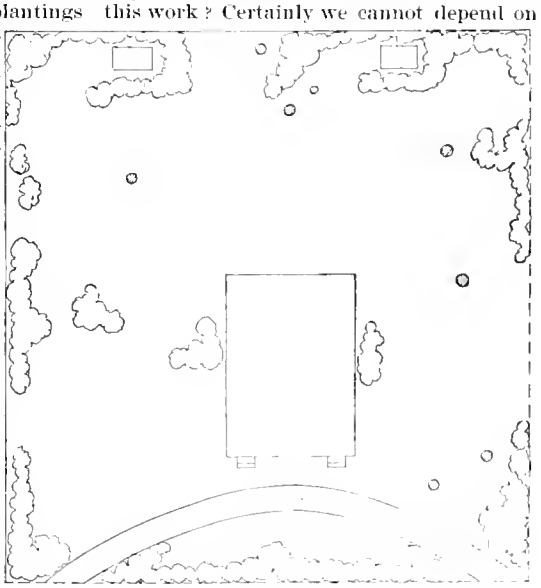


FIG. 2. PLAN FOR THE IMPROVEMENT OF FIG. 1, BY PLANTING SHRUBS. HIGHWAY ON TWO SIDES.

School Yard Improvements.

CHAS. W. GARFIELD, GRAND RAPIDS, MICH.

NUMBER 1.

There are many discouragements connected with the embellishment of country school grounds well nigh insurmountable. In accomplishing work of this character two objects should stand equally in view: 1st, The placing of an added number of valuable facts within easy reach of the pupils; 2nd, The education of the children and their parents toward a loving appreciation of the beauty in growing things which lead to a higher plane of satisfaction to be enjoyed as a part of life in this beautiful world.

As contributing to the successful accomplishment of the first object, the ornamentation must be guided by some one who appreciates what a wealth of information lies close about us, that is as useful in adding to the welfare of those who study as that which has taken the more labored form of printed lines in textbooks. Who can do this work? Certainly we cannot depend on the boards in charge of the schools; and in any suggestions I may make nothing will be expected of them. I know whereof I speak from experience as a member for some years. The inspiration, the method and the work must be in the teacher. And I confess

there is no surer method of cooling one's enthusiasm in this direction than in contemplating the source from which so much must be expected.

I have visited a great many schools, and examined a large number of applicants for positions as teachers in rural schools, and have been disheartened, as a lover of nature, at the manifested ignorance of the life, vegetable and animal, with which we have to do every day of our lives. A large proportion of these people who announce themselves as educators have not a single requirement for this broad field of instruction contemplated in bringing upon school premises trees, shrubs and plants with suitable environments for purposes of education. How can we expect assistance in this work from one who does not recognize the difference between a Linden and an Elm; a Red Osier and a Rose bush; a Golden Rod and a Fire Weed; June Grass and Meadow Fox Tail.

Young ladies are sent out to teach our country children who have graduated from high schools, have analyzed the required numberof flowers to "pass" in botany, who have no knowledge whatever of the environments of these plants, and still if we bring about our school grounds the embellishments that will count for the most, this lacking information is that most needed. The kind of instruction that the country boy and girl should have to assist them in getting on in the world and give them the largest measure of happiness, while they are getting on, is that which recognizes the great wealth of information within easy reach of the school room that can be gathered in by quickening the observation and pointing out the most available places to get the facts.

Recognizing this most serious difficulty to overcome, I feel as if Gabriel's last trump would be sounded before accomplishing any thing with our plans and suggestions of details in decorating school grounds unless we can secure a different style of education for those who are to carry our suggestions into effect.

In the accomplishment of the second object the most serious difficulty is the short time that our country teachers remain in one field of labor. There is little encouragement to embellish grounds the perfection of which depends almost entirely on years of growth. One may employ his constructive imagination in arranging plantations, having an eye continuously on the future resultant and enter into the spirit of the work if he is to enjoy the gradual development of the plan. But he will be very loath to attempt any thing of the kind when morally certain that he is soon to be succeeded by one who will not appreciate his work but will allow it to decline and come to naught from want of care.

I have been identified to some extent with an attempt in our State to make some of our barren school grounds attractive by disseminating information concerning the most simple methods, and arranging by the use of annual flower seeds to secure quick results from which a teacher could reap even in a single term some benefits. Some good has been accomplished but nothing commensurate with the effort and I am satisfied that to do a work that shall be cumulative and permanent we must lay hold of some plan which shall be closely linked with the normal instruction given in preparing teachers for their work. Our efforts must be expended elsewhere than upon the grounds that are to be improved, and the movement to improve must be in the hands of the men and women who are charged with the school education of our children. I say men and women advisedly, for it is time we called a halt upon the common practice of trusting primary education to girls and boys.

I will try briefly to show in my next the most primary line of work to accomplish the objects we seek as viewed from the level of my experience.

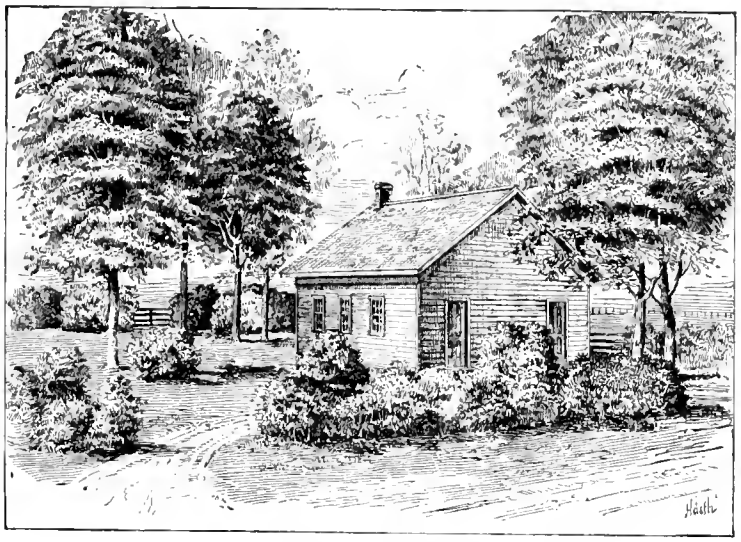


FIG. 3. FIG. 1 IMPROVED BY PLANTING AFTER FIG. 2.

Fruit Growing and the Tariff.

At a recent meeting of the Farmer's Tariff Convention in New York, J. H. Hale, of Connecticut, read a paper on Fruits and the Tariff, from which we extract this:

While the manufacturers, who are our competitors in the labor market, are protected by a duty of about 45 per cent on the average, thus enabling them to force up wages on us and also charge us more for nearly all our supplies, under the present tariff the government allows free foreign competition with our fruit products. Fruits that grow almost wild in the tropics with little or no labor, are now brought to our markets by ship loads (in foreign ships at that) and sold at prices so low as to tempt buyers, who would otherwise buy our best native fruits in their season.

I am referring now especially to Pineapples and Bananas, on which there was a light duty previous to 1883, but under the revision of our tariff laws that year they were admitted free. This greatly stimulated their importation, the value of which was less than $900,000 in 1882, but reached the enormous amount of $9,920,702 in 1886, an increase of over 400 per cent in five years.

The result of this on the sales and prices of our American small fruits, has been an enormous falling off in the former and a reduction in price of from 40 to 60 per cent in the markets most supplied by them.

From 1878 to 1883 the price of small fruits in Chicago, St. Louis, Cincinnati and other western markets was from 7 to 18 cents per quart; in Baltimore, Philadelphia and New York from 8 to 20 cents, and in Boston and other markets from 10 to 25 cents. From 1883 to 1887 there was a falling off in price to the extent I have stated, so that at Chicago and the other western markets I have mentioned the prices have been from 2 to 10 cents per quart; in New York and Philadelphia 3 to 12 cents, and in the New England markets from 4 to 15 cents, the lower prices not even paying for picking and freights to markets, to say nothing of the cost of producing the crop.

That there has been a decline in the prices for almost all goods during these years I will admit, but nothing as compared with our small fruits, and the only apparent cause of this decline is the one named.

Fruit growers cannot understand why it requires a duty of from 40 to 50 per cent to "protect" our manufacturing industries, while on the average 20 per cent is all the farmers get, where they get any "protection" whatever. The more thoughtful ones are asking themselves, does "protection" as practised under our present tariff law really protect the farmer? In my little State, it is said that the farms do not pay 3 per cent on the investment, while the factories pay from 5 to 20 per cent, and unless there is a revision of the tariff very soon whereby all industries will be more equally protected they will answer No, and by their votes demand that all products and manufactured goods be placed on the "free list"—a step which this country is not yet ready to take, but one which they claim would give all an equal chance in the pursuit of life, wealth and happiness.

The revision and proper adjustment of the tariff is not a party question, and should never be considered as such; both of the great political parties by action of their last national conventions are pledged to it.

Let us urge upon our Congressmen, regardless of party or party ties, to consider this great business question as becomes business men and patriots, and so readjust the tariff that our labor interests be protected, and the benefits and burdens be so distributed as to fall justly upon all. There is a fair and honest middle ground on which all true statesmen can meet and settle this great question.

Arbor Day in Schools.

The Arbor Day movement in America was inaugurated in Nebraska sixteen years ago. Since that time twenty-six States and Territories have each established one or more Arbor Days by legislative enactment, or special recommendation of the governor or school superintendent.

When Arbor Day was first established its prime object was to promote economic tree planting. The co-operation of youth was not then specially invited, and the change in the movement towards increased school work and school yard improvement is a comparatively new step. According to Dr. Northrop, in the New York Independent recently, this feature of Arbor Day is now everywhere made a prominent aim.

This enlistment of the schools, Mr. Northrop also well remarks in the same journal, has proved an effective way of calling public attention to the importance of forestry. The value and beauty of trees are impressively set forth in Arbor Day proclamations and circular letters of school superintendents, in the local press and in school celebrations with appropriate essays by pupils, songs, addresses, etc., by prominent citizens. A school district is easily led to patronize such a work in which youth are the actors. With proper pre-arrangement in awakening popular interest and in the selection and procuring of trees, vines and shrubs, Arbor Day may accomplish wonders, many hands making merry work.

This work naturally extends from the school to the home, leading children to share in dooryard adornments, and in planting trees by the wayside. Under this new stimulus more trees should be set out by the roadsides of America this spring than in any former year. Nothing can add so much to the beauty of our roads as long avenues of fine trees. The shade and beauty are grateful to every traveler and doubly so to the planter, for there is a peculiar pleasure in the parentage of trees, whether forest, fruit or ornamental. They compensate a thousand-fold for all the care they cost. Happy would it be for all our homes and towns, if, on Arbor Day, every parent, and every girl and boy, should plant, or help in planting (if too young to work alone), some vine or tree to be known by his or her name.

One of the educational forces of Arbor Day begins when children are prompted to plant, not only trees, but tree seeds, acorns, Ash, Elm or Maple keys, nuts, drupe-stones or pits, and then year by year to observe the wonderful miracles, which the tree-life they have started is working out before them. What interest and profit, what growth of mind and heart they will gain as they watch the mysterious forces of these living germs; their marvelous assimilating power, carrying on such a curious chemistry in their underground laboratory conjoined with the upper-story apparatus of foliage, secreting acids that dissolve sand and stones, transmuting coarse earth and even filth into living forms of beauty and fragrance. It is something to drop such a germ in the earth and think of its possibilities.

How lasting a contribution may thus be made to the natural beauty around the home. The trees which children start may be prized with a growing sentiment and become living memorials of happy youthful days.

An Improved Fan System of Training. The Kelly's Island System Modified.

D. S. MARVIN, WATERTOWN, N. Y.

Referring to my recent article, "Resin in the Vine," I had occasion to allude to what is known as the "Kelly's Island system" of pruning the Grape. Like a great many other practices in horticultural matters, an observing man often finds out the best way of doing his work before he knows the reasons for his practice. This and the modifications of the Kelly's Island system to adapt the work to all varying conditions of soil and climate has been found the best of all our systems, because it avoids the filling up of the channels of the circulatory system with the resin of the sap.

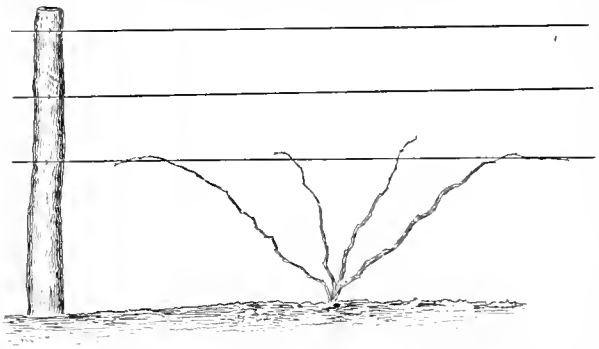
Under our conditions what is known as the fan system of pruning is perhaps as good as any, but it is by no means the old fan system, where the main portion of the wood is old wood with a spur of new wood at the end of the canes. Even this, though, is better than the regular arm and spur system.

In my experience the arm and spur system has done well for a few years and given good results; after this it has utterly failed to give satisfactory crops of fruit; the spurs especially become clogged as they annually lengthen and fill up with the resin of the sap. If continued the spurs get so clogged that the vine is forced to push out canes from adventitious buds at the base of the spurs. I have then been glad to use these canes and cut away the old spurs to renew the forces of the vine. Then the trouble goes to the arms, and they clog up and fill up so that whenever I could I made use of the canes that push out from adventitious buds at the base of the vine and made new tops.

I have even had to go so far as to cut away the old wood at the ground in order to force new canes to grow, losing of course one season's fruit in order to renew the vine.

If we begin with this renewal system while the vines are young, there is seldom trouble in getting canes to grow directly from the ground. Sometimes we may need to use a spur at the end of a cane, but it is cut away the second year and has no time to fill up and clog with resin. The crops from vines managed in this way are always the most satisfactory. I have usually left from three to five new canes and cut them when spread at the lower vine.

The accompanying engraving represents a sample vine ten years old pruned after my modified Kelly's Island system. It will be



IMPROVED RENEWAL FAN SYSTEM OF TRAINING.

observed that the right hand cane is two-thirds of it old wood, to be all cut away at the next pruning. The old canes that bore a heavy crop of fruit have been pruned away all but the stump of the right hand cane. Three or more buds at the end of the cane, as the vine may be strong or weak, are to be left to bear fruit, the others to be rubbed off, except enough to form new canes near the ground to renew next year's bearing canes.

If the vine is a very strong one and the spaces wide between the vines, the two outside canes are to be left longer to fill the spaces and meet the next vine. In this case I have left six or more fruit buds sometimes. It will be seen that the system can be adapted to the conditions.

When the vines are to be laid down for winter protection, there is no other system that approaches this for its convenience and economy of labor in the work of laying down in the fall after pruning. There are no old stiff canes to be broken and split in getting them down to the ground.

The system, as its name indicates, is one of perpetual youth. All the evils of the double arm system, especially the clogging of the circulatory ducts, is avoided.

The original Kelly's Island system was one long cane or arm, with spurs for next year's canes at the surface of the soil for removal, but it was found objectionable because it is always difficult to get the fruit spurs to grow uniform upon long canes, the first and the last canes growing too strong at the expense of the center canes.

The tendency may be somewhat counteracted by bending the cane for a few weeks in the spring so that the center buds are highest, then after they have grown even with the end shoots bringing the cane up to the lower wire, again forming a straight arm. This entails additional care and attention at the busiest season of the year, and is inferior to the plan given in the cut.

Still, the essential idea is the same in both plans; they each avoid the evils of clogging the circulatory ducts, and the difficulties of handling and manipulating old wood. The roots may wax old, yet they do not become infirm with age, as do canes above ground.

European or foreign vines can be trained upon the arm system better than our own, because they do not contain the resinous substances in their sap that ours do.

The Virginia Creeper.

E. W. L.

"The common Virginia Creeper has become a great favorite in London for covering walls, and is generally preferred to Ivy."

The above paragraph I read recently in a newspaper, and I am glad to know that this beautiful American vine is so appreciated in England. The Virginia Creeper (*Ampelopsis quinquefolia*), often though erroneously called Woodbine, is a lovely vine, and is so easily grown that every yard or garden should have at least one of them.

I have a number of these vines covering a shed, about one hundred and fifty feet long and twenty high, and it is one of the handsomest features of my garden. The leaves are a dark glossy green, and the vines that have a warm exposure will color beautifully in the autumn, from the darkest shade of maroon to the most brilliant scarlet.

It is a very hardy vine, needing no care or protection in the winter, and is one of the earliest to cheer us with its buds in the spring; and no insects or worms live or harbor on it.

It can be grown from the seed or from cuttings, as it will root easily at the joints, or from sprouts. It needs little or no cultivation, and makes a beautiful covering for an unsightly wall, fence or building.

It requires support like a Grape-vine; and when the vines are large and heavy a good way to fasten them up is to get at a lumber yard what are called furring strips; nail blocks an inch or more thick to the wall or building at proper height and distance apart, and then nail these furring strips on the blocks, leaving the vines between the strips and the wall; and as the vines continue to grow and clamber up, hold them up by nailing on more of these strips.

Some Notes on the February Issue.

W. FALCONER, QUEENS CO., N. Y.

EARLY CELERY. It is almost impossible for me to get blanched Celery as early as July 1st (p. 89), on account of rust.

AN IMPROVED HOT-BED, p. 91.—First-rate in every way. But if I could afford to build a house like that I'd heat it by hot water and a base burning boiler. Manure at $2 a wagon load, and the time spent in hauling, heating, fitting in and etc.! No, it wouldn't pay on Long Island.

PEAS. I think it better to wait four or five days and get delicious Alphas than to strive for earliness and eat the comparatively tasteless Daniel O'Rourke—the "Earliest" and "Extra Early" of many seedsmen.

MINA LOBATA, to flower it, p. 92.—Raise the plants early, plant out in poor soil and a warm, sunny exposure. It has flowered beautifully in several places around New York.

NO MONEY IN RADISHES.—Riverhead, at the east end of Long Island, February 23d, a butcher's store. Splendid Turnip Radishes in bunches of a dozen roots were for sale; price 3 cents a bunch! Grow Radishes and starve to death!

AN EFFECTIVE TREE GUARD, p. 100.—Perhaps it it were turned upside down. As the lowermost branches are the widest spreading, so should the guard be widest at the bottom. And that is bad; it should be of the same width top and bottom.

GALTONIA (*Hyacinthus*) CANDICANS, p. 101.—It bears and ripens seeds abundantly. Seeds sown in rows out-of-doors in spring germinate as readily as do those of Onions or Gladioluses, and seedlings bloom the second year. While young bulbs have been perfectly hardy with me, old or large bulbs left out-of-doors have rotted.

TO MAKE A QUICK LAWN, p. 105.—No, No. If you wish to make a lawn don't use either Oats or Timothy under any circumstances, nor sow an ounce of Red top that costs only 40 cents a bushel.

AMARYLLISES FROM SEED, p. 594.—Sow any time when you get the seed, providing you can keep up a minimum temperature of 60°. In sowing I stick in the seeds edgewise; in this way they are less apt to rot than if they were sown flat on their sides. They germinate in 3 or 4 weeks. I

don't rest them at all the first winter, but do so the second winter. Most of them will bloom when three years old. They are very easily raised from seed. I have some magnificent Amaryllises in bloom now, and from seed sown in the spring of 1885. The seeds cost me 5 cents each; I wouldn't sell the bulbs for a dollar each.

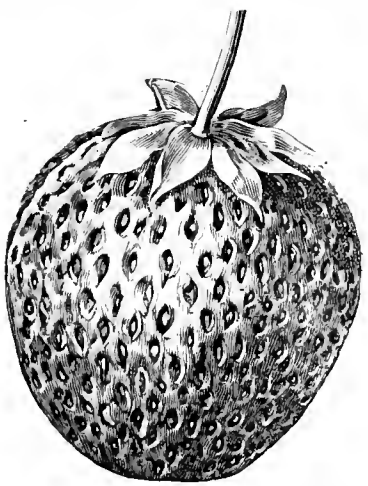
CYTISUS RACEMOSUS, p. 114.—I should call it *C. canariensis* and its variety *C. c. var. racemosus*. I grow them both. They come in with me about the middle of January and last till the end of March. The European article you quote is all right in Europe, but far too tedious and mysterious for us in America. I grow my Cytisuses in this way: In January, February or March I take cuttings of the young wood in the ordinary way and strike them in sand in the ordinary way, in a shady part of a warm greenhouse. In three weeks after being put in they are rooted; I then pot them off singly into any kind of light soil and keep them near the glass in the greenhouse. About the end of April they are put out into and plunged in frames and slightly shaded from sunshine; during the summer months they remain in frames out-of-doors and covered over with lattice shading, or planted out in the open ground and lifted and potted in September. I winter them in a cool greenhouse. Red spider is their worst enemy. Never let them get very dry at the root. They make capital house plants. One year old plants bloom; they are in their finest condition when two years old. They will grow into very old bushes if retained, but I much prefer fresh young plants.

Practical Thoughts on Windbreaks.

D. N. LONG, ERIE CO., N. Y.

GENERAL UTILITY. At no other season can the value of a windbreak be so appreciated as in the winter. Its very presence gives to a home a look of coziness and comfort, while if it be rightly located on the windy side, it serves a most economical purpose as well, in the saving of fuel and health, and of feed for live stock.

Not only with the present low price of that best of screen trees, the Norway Spruce, should all farm buildings be well protected by belts of these, but it would prove a paying investment to provide lines of such to the windward of each field or lot. Here they would serve the several purposes of protecting the crops in the winter by preventing the snow from drifting off and also from the drying winds and storms of summer. A Spruce wind-break would make



THE ITASCA.

an excellent line fence, that would last a lifetime, and would often save over-winter crops from heaving, by keeping the snow on it.

On the garden and fruit farm especially a good Spruce wind-break on the north and west sides would serve as the best kind of a protection, and indeed would promote earliness even more than the much coveted slope to the southeast. A wind-break at 18 to 20 feet high is not only a very effectual wind-break, speaking in direct terms, but better than all else it leaves the snow nearly on the level and evenly spread over the surface, instead of in drifts, thus securing a winter mulch in snowy sections.

EFFECT ON THE WIND. The degree to which a well grown evergreen belt will break the force of the wind is most remarkable. Even when a storm is raging and the wind has acquired a speed of 40 miles an hour, scarcely the least current will be felt to the leeward of such a living barrier. That much of the complaint against tender, short-lived and unprofitable fruit trees, bushes and plants is due to the unprotected condition of fruit plats is now well understood by our wisest horticulturists. Another point in favor of protected orchards is this: much of the best fruit that grows necessarily becomes wind-falls, where there is no adequate protection from winds, because the largest and finest specimens are usually the first to fall before the force of the wind.

For the early vegetable garden a wind-break is of inestimable value. By its presence the severe cold storms and bare ground of winter, the cold raw winds of March, the drying winds and severe storms of midsummer, and the cold November blasts, could all be avoided. Aside from the consideration that early vegetables could be grown to be much earlier, and it may be said that damage by wind to the glass of the hot-beds and cold-frames would also be avoided.

STARTING WIND-BREAKS. Is the almost universal absence of such a valuable adjunct to the fruit farm and garden to be laid to high cost? This cannot be, for the price of evergreens and especially of thrifty young nursery seedlings is by the quantity really ridiculously low. If such are procured and brought along on the premises the cost really needs hardly to be considered.

The one fact that more than any other may account for much of this seeming neglect, no doubt, is the poor success that so often attends the transplanting of medium and large evergreens especially. The fact is not to be disregarded that as compared with deciduous trees, evergreens as a class are very susceptible to injury from improper handling between digging and transplantnig. But on the other hand, by right methods, there are no easier trees to have grow. The great and only secret is, keep the roots always moist and protected from air and sun; exposure to a drying wind or sunshine for even but ten or fifteen minutes is almost certain death. It is for just this reason that the average sized nursery evergreen that is shipped succeeds so poorly. And it is the one strong reason why, if this kind of stock cannot be obtained from a nursery close at hand, it should by all means be procured in small sizes, such as can easily be handled and packed, to be kept moist and then be grown on the place until large enough for permanent planting. Indeed, the smallest sized seedlings with having less top than root and with no stiff side branches can be so readily and compactly done up that they can even be received with safety by mail. It need not be said that the cost of such is very insignificant.

DISTANCE TO PLANT. For the purpose of a wind-break alone Norway Spruce can be planted from 2 to 6 feet apart, according to the means to be expended and the haste for shelter. In time 6 feet apart will make a complete shelter, especially for orchards. If also wanted to turn stock, the trees should not be planted farther than 3 or 4 feet, and then by attaching a couple of barbed wires to them when 6 or 8 feet high a good fence, as well as wind-break, will result.

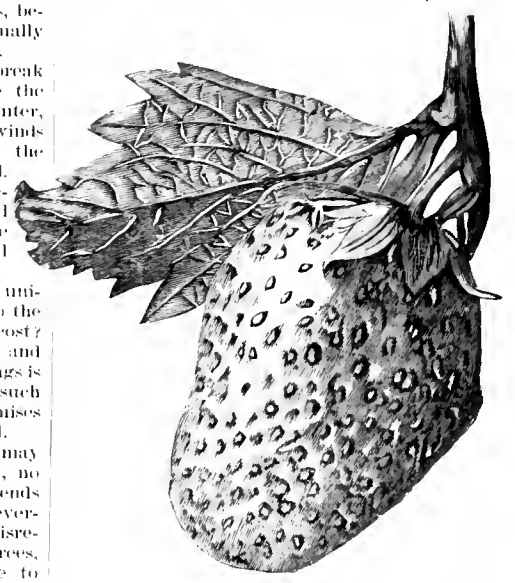
While some other evergreens besides the Norway Spruce make good wind-breaks, this variety being perfectly hardy and making rapid growth on almost any kind of soil, and is not easily injured by trimming, is pre-eminently the best for general purposes. The American Arbor-vitæ makes a good hedge, but is more liable to be broken by snow while young. It is also of slower growth, and requires to be set closer, and loses its bright green color in the winter season.

Some Recent New Fruits.

HAVERLAND STRAWBERRY. This new variety, the stock of which is being disseminated by M. T. Thompson, East Rockport, Ohio, is described by its originator as being a seedling of Crescent, fertilized by Sharpless. The berries are firm and of uniform shape, averaging very large, of most excellent flavor, and are of a light red color. The plants are large, healthy growers and ripen their fruit with the Wilson. They withstand rust or blight as well as any other varieties. Pistillate.

ITASCA STRAWBERRY. As described by its disseminator, J. H. Haynes, Delphi, Ind., this is a seedling of Manchester, fertilized with Seneca Queen, and originated in 1880. It has never failed to yield a full crop. It outyields Crescent, is larger, of better quality and carries its fruit well to the last. In beauty of fruit and vigor of plant it has no equal. Hundreds of plants may be seen at fruiting time with from 200 to 225 berries on.

THE MILLS GRAPE. This variety was raised by W. H. Mills, of Hamilton, Ont., by crossing Muscat Hamburgh with Creveling. Bunch very large, compact, shouldered, some clusters weighing over twelve ounces. Berry large, round, jet black, covered with a thick bloom; flesh firm, meaty, juicy, breaking with a rich, sprightly flavor. Skin thick; berries adhere firmly to the



THE HAVERLAND.

peduncle. Vine vigorous and productive; foliage large and healthy. Ripens about with the Concord, or a little later, and is a long keeper. "It is a Grape which for size, quality and appearance comes the nearest to the ideal variety of any we have seen," say its disseminators, Ellwanger & Barry, of Rochester, N. Y. "Its quality is the very best, exceeding in richness any hardy Grape we are acquainted with. We do not presume to say that it will succeed in all soils, situations and climates, but we believe that in a climate similar to ours, and with a reasonably good soil, situation and treatment, such as every Grape should have, it cannot fail to give satisfaction."

MOORE'S DIAMOND GRAPE. This is a new white Grape raised by Jacob Moore, Esq., of Brighton, N. Y. (the originator of the well known Brighton Grape), who considers this the finest and best of his collection. It is a pure native, being a cross between the Concord and Iona. Vine vigorous and entirely free from mildew. The parent vine has been in fruiting the past ten years, standing in the open ground near Rochester, N. Y., without the least protection, and coming out sound to the very tip every spring, even when other varieties considered hardy have killed badly. It is a prolific bearer, producing large, handsome, compact bunches. The color is a delicate greenish white, with a rich yellow tinge when fully ripe; skin smooth and entirely free from brown specks or dots; very few seeds, juicy and almost entirely free from pulp, which makes it almost transparent when held up to the light. Berry about the size of the Concord, and adheres firmly to the stem. It is said to ripen three or four weeks earlier than Concord.

THE MOYER GRAPE. This is styled by its introducer, Mr. Allen Moyer, St. Catharines, Ont., as the earliest, best and hardiest red Grape in cultivation. It is said to resemble the Delaware, but is three weeks earlier; a stronger grower, fully as hardy, and equal if not superior to it in quality. The leaves are thicker and darker than those of the Delaware. Vines on a trellise where the thermometer has indicated 35 degrees below zero have come out all right.

THE IRONCLAD GRAPE. This new variety is being introduced by A. W. Pearson, of Vineland, N. J., President of the New Jersey Horticultural Society, who speaks of it as follows: "My attention was called to it in 1873 as a Grape free from black rot. It is especially valuable as a wine Grape being free from foxiness, possessing a high per cent of acidity but also of sacharine and a remarkably rich and durable royal purple color. For making unfermented Grape-juice it is thought by consumers to be superior to any other Grape. It is vigorous and productive, bearing small compact clusters of fruit. Berries one-half inch in diameter, blue-black, pulpy. It is of little value as a market Grape, being not attractive enough in appearance.

Fruit Growing in Michigan.

J. N. STEARNS, KALAMAZOO CO., MICH.

BLACKBERRY PRUNING. We made a mistake in heading back the Kittatinny Blackberry too close, as they bear more on the ends of the canes. The Snyder, on the other hand, have a fruit spur at every bud, and set more fruit than can in ordinary seasons be perfected, hence this variety should be headed back much closer than the other.

GOOSEBERRY MANAGEMENT. Another mistake was made in not thoroughly pruning the Gooseberries. After the work was about half done other business pressed and the balance were unpruned. Result: the fruit of the unpruned was about half the size of the other, and brought much less in market. Large size is the first point in obtaining best prices for any fruit. The Gooseberry has been our best paying fruit for the past three years, netting at the rate of nearly $1,000 per acre last year. We headed off the worm thoroughly last season by dusting the lower part of the bushes, with a mixture of Paris green, plaster, ashes and flour.

It should be applied when the leaves are two-thirds grown, at which time no worm is yet in sight. Thus the first crop will all be killed and making much less work to manage the second crop, which usually appears just before the fruit ripens. This batch should be fought with white hellebore, which will be most effectual if applied in solution with a force pump.

EARLY PLANTED STRAWBERRIES. We hit it last year in setting our Strtwberry plants early, thereby getting a perfect stand, and good stocky rows; while those planted later have very spotted patches, and are light in the row, on account of the prolonged drought.

BATTLING AGAINST CURCULIO. We partially failed last season in fighting the curculio on Plum and Peach in not getting at the work early enough. At the season of the blossoming of these fruits it was very warm, so they passed through this stage very rapidly and these conditions were favorable to the insects, and they were getting in their work quite in advance of us, reminding us that the successful fruit grower should be eternally vigilant.

Our mode of fighting the curculio, and very satisfactory if commenced in time, is this: With one bushel of stone lime we use about one pint of crude carbolic acid, with just water enough to slack the lime to a dry powder. As soon as the blossoms begin to fall the trees are dusted thoroughly with this while the dew is on; renewing the treatment as often as washed off by rains.

DROUGHT—SUMMER WATERING. We were fully remunerated for the extra cultivation given to ward off the effect of the unprecedented drought. We thoroughly stirred the ground every week, either with the disc or spring-tooth harrow, although there were no weeds to destroy.

The experiment in hauling water to wet the roots of 1,000 Peach trees proved very satisfactory. It enabled the trees to carry the fruit through to maturity in good shape; where many orchards not well cultivated or watered the fruit wilted and dropped from the trees worthless.

Our plan of watering was as follows: We hoed the soil away from the tree to a distance of from three to four feet all the way around down to the roots; this making a basin in which we put in from eight to ten pailfuls of water, allowing it to soak away among the roots, then the soil was drawn back and left loose, which served as a mulch to hold the moisture. On digging down to the roots two weeks or more after this application, the soil was found to be moist and in condition to properly develop the fruit.

CULTIVATION FOR PEARS. We made a mistake two years ago in not cultivating our Pear orchard; the result being that nearly all the fruit was scabby and very poor. Late in the fall we had it plowed, and the last season kept it thoroughly cultivated, and as soon as the fruit set sprayed the trees with a weak solution of London purple, and out of some 2,000 baskets of Pears I do not think there was one bushel of wormy Pears. My commission men told me they were fully equal in appearance, and far superior in quality to any California Pears.

Do Varieties Deteriorate?—Some Illustrations.

E. WILLIAMS, MONTCLAIR, N. J.

President Smith of Wisconsin in a paper before the American Pomological Society, at Boston last September, I believe, advocated the negative side of the question, and cited his experience with the Wilson Strawberry as the most prominent feature to illustrate his position. While this variety with his special care in propagating, cultivating, and management, on his peculiarly favorable soil has retained its health and productiveness for a long series of years, it does not alter the fact that elsewhere, if not almost everywhere else, it has deteriorated in some places to the extent of almost total failure.

With an experience of 30 years, and a trial of perhaps 100 or more varieties, I cannot name one that has continued to maintain its original health and vigor for a series of years, provided it had other merits of sufficient importance to secure its retention for that length of time.

Hovey's Seedling, one of the first varieties I ever planted, did admirably for a while, and though Mr. Hovey persisted during his whole life that it was still as good as ever, it failed on my grounds, and later attempts with plants direct from the originator have utterly failed. Most of the plants had degenerated into hermaphrodite or perfect flowering plants, while the pistillate ones utterly refused to exhibit vitality sufficient to make a respectable show at growing or fruiting, and last season I plowed them under with disgust at their behavior. The Sharpless, of more recent date, so remarkable for its vigor and health that it still stands near the head of the present varieties for size and popularity, shows a strong tendency to disease and unfruitfulness in striking contrast to its behavior when first introduced, so much so that some growers have discarded it.

The Downing Strawberry held its own for a long time, but now its culture is attended with many uncertainties. If I could by any system of propagation, culture or fertilization, be assured of restoring and retaining its original health and productiveness, I would not exchange it for the whole list now before us. But its liability to disease renders it unreliable as an entire dependence. This weakness or tendency to disease, which we call deterioration or degeneracy, for want of a better term, seems to pervade not only the whole list of Strawberries, but other fruits, as well as vegetables, and is the chief incentive for the production and trial of new varieties. It is this hope and desire in the heart of the cultivator, that new blood infused into the new varieties by crossing and hybridizing may result in securing varieties of more robust and healthy constitutions, that affords the chief inducement for purchase and trial, and I am sorry to add that the introducers and disseminators of the new things very generally endeavor to excite the credulity of the purchaser to a far greater extent than the real merits of the article or common honesty will justify.

But the field of deterioration of fruits is by no means confined to the Strawberry. It pervades all classes and localities in the older states at least, and few indeed are the intelligent observers who cannot look around them and instance numerous cases. A notable one is the White Doyenne, (or Virgalieu—St. Michael's Butter,) Pear. It does seem to me that a better Pear never grew, and the time was when it did splendidly in this vicinity, but we might as well expect to grow Oranges or Pine-apples here successfully now as to attempt to grow this old favorite. The same is true of it in many other sections. Flemish Beauty also.

The Canfield, Harrison and Fall Pippin, or Vandevere, Apples were our leading and surest Apples in this locality 30 or 40 years ago. Now all attempts to grow any of them are attended with very indifferent success. I have seen Harrison Apples that would average as large as the finest Tallman Sweets, and keep without difficulty until March and April. It is rare to see a specimen more than half the former size. Young and vigorous trees of Canfield do not begin to compare in productiveness and size of fruit with their ancestors. Why? How can we account for these changes save by deterioration. That expresses it as no other word can, and these are not isolated cases either.

This may be due to some extent to the exhaustion of certain unknown elements in the soil, but we know we produce on the same soil larger crops of other kinds than were grown in those days, which does not seem to indicate lack of fertility as generally understood. Change of seasons and climate may be responsible in a great measure for the differences. How far we can counteract these charges by any efforts of ours is extremely problematical.

Change is the law of nature. It is the Divine decree. It is visible all around us in the animal and vegetable world, and we may as well submit to the inevitable. The most successful fruits of to-day will ere long attain the height of their perfection, and though this may be maintained and prolonged for a time by man's efforts, decline and deterioration will inevitably ensue, and newer, if not better, varieties will take their places, to be in due time supplanted by others.

M. B. Faxon on Growing Garden Vegetables.—Concluded.

In order to cultivate vegetables with success, proper attention must be given to the preparation of the soil. Drain properly, so that all surplus and stagnant water which may accumulate can pass freely away. After this is effected, the ground should be trenched as deeply as the nature of the soil will permit, and should be thoroughly enriched with plenty of good barnyard manure.

Vegetables can be raised with more or less success on soil of varying richness, but, taking an average piece of ground, if five or ten cords of good barnyard manure were to be spread broadcast and harrowed in at some time during the fall, and in the spring five hundred to one thousand pounds of some good chemical fertilizer be dropped in the rows at planting time, this would be, no doubt, about right for each acre of garden.

POLE OR RUNNING BEANS. These as a class cannot be planted until settled mild weather, say from the 20th of May until the 1st of June. Four plants in a hill, with hills four feet apart each way, is as close as they should be grown, as they require plenty of air and light. Limas and Sievas, being very tender, should not be planted before the ground is very warm and mellow, say about June 1. For shell beans, the best kinds are Large White Lima, Sieva or Small Lima, and Pole Horticultural. Either the Black Wax Pole or Indian Chief is an excellent snap or string bean. The dwarf kinds are far superior for the latter use to the pole beans; for the pole varieties one row will be enough, which may be divided between the Limas and Pole Horticultural.

Bush or Dwarf Beans. Though somewhat hardier than the preceding, they should not be planted until settled weather. All Beans do best in warm, light soil, but will flourish in almost any soil or situation unless shaded or very wet. Early Yellow, Six Weeks and Dwarf Horticultural are the best among the green-podded kinds. For yellow varieties, Golden Wax, White Wax and Black Wax take the lead. Of string beans, as we need a bountiful supply, two rows should be planted, divided somewhat as follows: One half-row of Early Yellow Six Weeks and one half-row of Golden Wax, planted say May 20. Then wait till about June 10, and plant at that time another half-row of Golden Wax and half a row of Dwarf Horticultural. The latter, if not needed as a snap bean, can be allowed to grow for shelling, for which use it is one of the best.

Sweet Corn. This is universally grown, being ready for the table at a time when the early summer vegetables are nearly gone by and the fall vegetables are not quite ready. It is better to plant in rows than in hills, and if the plants are thinned to about eight inches apart, the yield of the rows will be larger than can be obtained from hills. By successive plantings every two weeks from the 20th of May to the 1st of July, made with any good early variety, a continuous supply may be had, covering a longer period than if several different varieties, of early and late kinds, are planted at the same time; for as the season advances it seems as if all kinds were ripening together. It is well to plant enough for a bountiful supply all through the season.

The Cucumber. Cucumbers in the open ground should be planted about June 1. A dozen hills will supply all that are needed of the table sorts; but in planting for pickles each family must consult its own needs.

The Muskmelon. The Cantaloupe Melon is one of the Muskmelon family, and is a delicious fruit, too well known to need any lengthy description. It is to be planted in hills, and thinned to three or four plants in each hill; but must not be planted until the ground is warm, for it is almost as tender as the Squash. When the plants have made four leaves, the ends of the main shoots should be pinched off; this will strengthen the growth of the vines and hasten the maturing of the fruit. The Arlington, Montreal and Hackensack are three as good Cantaloupe Melons as can be found.

The Watermelon. Watermelons are not grown with very good success here, as our seasons are not long enough. A few hills may be planted by way of experiment, and if they fail the loss will not be great. The same culture as for the Muskmelon.

The Potato. The cultivation of this vegetable is a large subject in itself. Thorough and clean culture should be given until the blossoms appear, after which no further attention will be required until harvesting time. At each successive hoeing, gather the earth about the plant, adding a little each time for support and also to develop the side shoots.

The Squash. This is one of our tender annuals, and should not be planted until all danger of frost is past; and, aside from the tender nature of the plant, the seed itself is liable to rot in damp, cool weather. Fine plaster is about as good an article as has yet been found for driving away the bugs. Plant Early Summer Crookneck and White Bush Scollop for summer use; Boston Marrow for fall; Hubbard, Essex Hybrid and American Turban for winter. The crop must be gathered before it is nipped by frost, or it will not keep well. A dozen hills of the summer kinds will be enough, but of the late sorts plant five or six rows.

The Tomato. Tomato plants should be set out about the 1st of June; the ground should have been made very rich, and if it is kept free from weeds, no further attention will be required. Just before frost the vine may be taken up with all the earth that can be kept adhering to the roots, and transferred to the cellar, where all the full grown Tomatoes not already picked will ripen. I have seen perfect ripe Tomatoes of most excellent quality on the table at Thanksgiving which had been ripened in this way. There are so many good varieties of this vegetable that it is hard to make a selection. Three or four dozen plants may be required in order to furnish a good supply all summer; they should be set eight feet apart and will occupy about two rows such as described.—Before the Massachusetts Horticultural Society.

This, That and the Other.

M. T. THOMPSON, EAST ROCKPORT, OHIO.

As Spring is at hand, is the required amount of manure or fertilizers ready for use? Has the plow been fixed and painted ready for work, and have we got an extra point or two in case of breakage, so that a whole day going to town will not have to be lost to get one when work has commenced? Just one day lost in Spring might from unfavorable weather or other causes put you back one to two weeks, with not near the crop you ought to have had by the earlier planting. Are your other implements ready to go to work the first good day that comes, or will you annoyingly borrow from a good neighbor again, waiting until his work is all done? Say nothing of the delay to you, this is bad business. Your neighbor may not like to refuse you, but the tools are his and he needs them. He may think he will be through by to-morrow, but when night comes the chances are he did not get quite done and you are put off, to your detriment. Of course this applies to other tools and articles also.

The fact is, that to compete with the low price of produce and fruits, you have got to have the necessary equipments for work all ready when the time comes. I recall a few years ago, when we had very open weather in February, and on the second day of March I sowed my Yellow Danver Onion seed. The next day it snowed and I could not get any more in until the last of April. The weather then came off hot and dry, and the first seed in came up finely and was two weeks earlier than the late April sown. The result was the first lot brought twice over what those did planted two weeks later. Onion seed is not hurt by freezing, and the earlier you get them in the less "stiff necks" (such as do not form a bottom) you will have. For Onions, therefore, have your land ready, your drill ready, and your seed also ready. Don't put it off on the plea that there is time enough yet.

Strive this year as never before to excel. Have everything ready on time and beat your neighbor if you can by raising better crops on the same kind of soil, through giving it more intelligent attention and better and cleaner cultivation. In marketing see if you cannot manage to get home earlier and not detain yourself by trifles. If a great many more that I know would do this, I am sure they would be the gainers.

Teach the boys to market by taking them with you frequently. It helps them and in turn will help you. I have a 11-year old boy that will take to market just as big a load as I can get on a two-horse spring wagon, and sell it just as well as I can, and this he has been doing for several years. Another way to encourage the boys, and the girls as well, is to give each a piece of land to have all they can raise on it. Let the piece be according to the size of your place, and let them have a horse to plow and cultivate it, and give them the planting stock to put in; just such as they think they would like. The boys can get sister to help, and thus become partners in such enterprises. They will work on it when often times they would be into mischief.

I favor doing all one can to keep your children from the cities; they are much better off on the farm, as is shown by the fact that our leading men in all walks of life were brought up on the farm. There is no doubt but what soil tillage is the glorious work of man. If it has its ups and downs, so do all other enterprises.

Right Methods in Setting Out Trees.

Z. C. FAIRBANKS, TRAVERSE CITY, MICH.

My convictions are that nine tenths of all fruit and other trees set out are set and treated in a way that they cannot thrive.

I recall an instance of some two years ago, in which I supplied a man in this state with 30 Apple trees. He had them heeled in, and on a certain drizzly morning when some of his neighbors and myself were present, he asked me to show him how to set out one of those trees. He first dug a hole for it, then said, "now set the tree." My response was made by taking his shovel, and laying coat and vest aside, throwing out the dirt the width of the shovel around the hole he had dug. The surface soil was about the depth of the shovel blade's length, beneath which was clear gravel and sand, in which there was not a particle of vegetable mold.

Reaching this sterile subsoil I threw of it out to a full shovel's depth. One of the lookers on asked whether I was digging my grave. I filled the lower part of the hole thus made with surface soil, on which the tree was set. "If that tree does not live, remarked a bystander, no tree ever will live." The owner received his lesson with the remark that he had set a great many trees, but had never seen one put out as that one had been, and that all the others should be similarly set to live and to grow.

But alas for good resolves. That was the last and only tree of said 30 trees that was set that spring. The following fall the bundle of trees stood heeled in just where it did that morning. I could account for it only on the grounds that my friend, having resolved to set said trees by the thorough method I had shown him, failed to summon courage to take hold and do it. Had there been no greater call for muscle than his usual mode of setting did, the trees no doubt would have been planted.

On another occasion a gentleman of this State was about to plant two Standard Pear trees, and remarked to me that he intended setting them in his door yard. That to me meant no culture. Taking dinner with him I suggested that after dinner we set out the trees, to which he agreed. When the holes were dug to the size of six to seven feet across and two feet or more deep I asked for the wheelbarrow, and filled it with scrapings from the barnyard, which we thoroughly mixed with the other soil to put in the holes and bottom. Into this mixture we set the trees. They bore the second year, one of them six, the other 11 nice Pears, and to-day they are fine trees, having continued to bear each year since.

My convictions are, that if as much time and labor was to be applied in the preparing of the soil and in the setting of the average tree as it would take to earn the money to buy said trees, the foundation for successful fruit growing would be laid.

578. **Land for Strawberries.** By all means plant on the high land. When planted on low land they are apt to be destroyed by ice or water lying on them during the winter season.—C. E. P.

586. **Propagation of Hydrangea Paniculata.** You can readily increase this shrub on a limited scale by layers.—C. E. P.

Some Comments on Current Topics.

S. S. CRISSEY, FREDONIA, N. Y.

1. It does not look to those best informed among our vineyardists as if the Worden will ever supplant the Concord as a general market and shipping Grape. Further trial may change this opinion, but it seems too soft to be safe for long shipments. As a second early market black Grape, coming between the Moore's Early and the Concord, it is a success. The vineyardists having the Worden, can let their Concords get fully ripe and well colored.

2. Before final judgment is pronounced on the Keiffer Pear, try it for canning. For eating out of hand it is miserable, but good judges pronounced the samples which were grown and canned here the past season, as of exceeding fine quality, and superior to any other variety. Don't condemn the Keiffer till you have tried it canned!

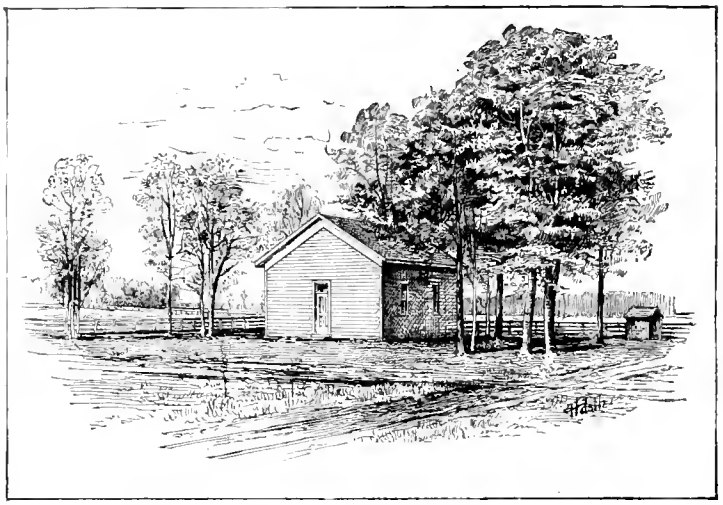


Fig. 4. A Country School House. From a Photograph.

3. In all established vineyards, put up on post and wire trellises, there should always be three wires, and probably four would be better. But you cannot get along with less than three. This may or may not be the "Kniffen" system; it is the "Common Sense" system, and our best growers are falling into line and adopting the plan. If anybody wants the reasons we can give an abundance of good ones. By the way, always buy No. 9 wire of good quality.

4. Look out for the English Sparrow. He has come to stay and the pirate will eat and destroy Grapes. If you have a few choice vines in the garden you will need to watch them, and we advise bagging if you want to save them.

5. Every fruit grower should have the year round a compost heap. On it should be poured all house slops, soapsuds, etc. It should have a large proportion of loam, old sods, and an occasional sprinkling of salt. Keep unleached ashes by themselves.

6. The first bearing year, usually the third year from planting, never put up more than two bearing canes, having not more than six buds each. This is no theory, nor guess work, but the result of the dearly bought experience of many growers.

7. The man who pays $35 a ton for commercial fertilizers to sow in the vineyard and then lets the weeds grow, may not be a fool, but his symptoms look that way.

8. For profit and good looks the Pocklington is one of the first if not the first white Grape. As to quality it must take second place. If you want to grow a white Grape that is of A. 1. quality try the Lady.

Raspberry Growing.

E. MORDEN, NIAGARA FALLS SOUTH, ONT.

My plans in some respects are different from those related in a recent excellent article in these columns. Instead of planting 2½ or 3 by 6, I plant about 4x6 and cultivate crosswise as well as lengthwise. The advantages of this plan are almost self-evident. The sucker varieties, instead of forming a dense hedge with many unproductive canes, are confined to a small "hill" with a limited number of productive canes. In the case of both sucker and tip varieties the work with a hoe is reduced to a minimum, while nearly the whole of the soil is stirred up to a sufficient depth. I plant and cultivate Gooseberries and Currants in a similar manner. I never use a plow in the berry plantation. It may be excusable upon some hard soils. I use a cultivator that can be made to stir up the ground to a considerable depth, while it leaves the surface nearly level. A neglected Raspberry patch soon ceases to pay.

Previous to planting any of the small fruits I prefer to have the ground deeply plowed and well manured, and the grass and weeds subjugated. I have always found much trouble from the use of stable manure upon growing plantations. Such manure nearly always contains enough grass seeds to establish a sod.

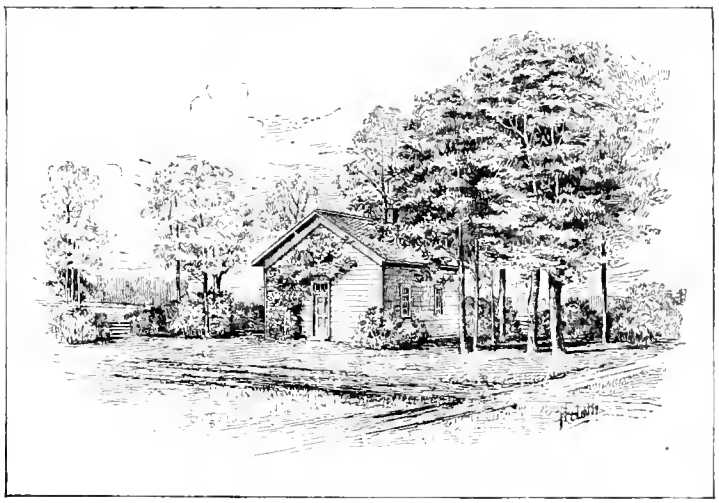


Fig. 6. The same as Fig. 4, with the planting done after Fig. 5.

ORNAMENTATION OF COUNTRY SCHOOL YARDS. SEE PAGE 138.

The Cuthbert is the only Red Raspberry that I care to grow for market. Although Peaches, Grapes and the tender fruits came safely through the winter and spring of 1887, the Cuthbert was severely shortened with me. Previous to this time it came safely through. I have not met anyone who could account for the injury to the Cuthbert in this instance. Considering their intrinsic value, Blackcaps have been the cheapest of fruits of late years. As they cannot be produced, picked and marketed at the prices recently realized, their cultivation is likely to be narrowed down to soils that are especially suited to them.

General farmers ought not to try to grow Raspberries for market. They make nothing themselves, and so demoralize the markets that even specialists fail to make the business pay. Cultivators of the soil must soon learn, as men in other walks have, to confine themselves to certain specialties that are most suitable to them.

About Rose Pruning.

W. F. LAKE, ERIE CO., N. Y.

As to the actual amount of pruning-in of last year's growth on Hybrid Perpetual Roses, but few rosarians claim that any hard and fast rules can be laid down. Perhaps the safest, and on the whole the most useful, is to let everyone be persuaded in his own mind as to the reasonableness of his practice. After removing the weak and exhausted shoots, all over the plant first, the stronger branches that need shortening most will be more obvious, and the degree of such cutting may be readily and more wisely determined. To cut out entirely all such weak branches helps to prolong the life, augment the vigor, and greatly improve the beauty of the bushes.

The proper time for pruning those entirely hardy, is late in the fall, but those varieties which are liable to be frozen back in winter (and it is to be regretted that with severe northern winters these are not few among the list of Hybrid Perpetuals) should be left until early spring.

Many advocate the principle of leaving more wood on Teas than on the hardy sorts, but I have noticed that the former are as much benefited by short pruning as the latter. At times, however, it is impracticable to prune Teas as close as desirable, owing to long jointed habit of growth, and in this case cut at a plump bud, even if it be at some distance up from the soil.

Never leave a stalk cut off at a point halfway between two buds; it is the very evidence of a novice in the gardening art. This not only applies to Rose culture, but to anything that has to be pruned.

It has been said by an experienced Rose grower the weaker the growth the more severe should be the pruning, and the stronger the growth, the less severe should the cutting be.

When the first pruning of the spring is done do not think that the knife is to be laid aside, for if we aim at quantity of bloom from closely pruned plants, it should be in hand the whole season through.

Go over the bushes as soon as the first buds start, and where several appear at the same joint, rub all away but the one strongest, and on tender Roses go over them again after the shoots are sufficiently long to see if any are coming blind, that is without flowering buds or the power to produce shoots. If any such are found, cut back to the main shoot. Never permit a blind shoot to grow on. It is not a very easy thing to write how a blind may be distinguished from a flowering shoot, but I am confident that an observant person by the aid of some careful comparisons cannot fail to distinguish such.

The experienced specialist in any class of plants, though learning always, looks back to the same lines that led to success, and repeats his methods. So should we also learn in the matter of how we prune.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

EARLY STRAWBERRIES. Some such may be had by taking up a few sods of matted vines the first open spell and putting in the greenhouse or hot-bed, but care must be taken to have them close to the sash and have them well covered every day when it will do to raise the sash.

SHELTER BELTS. These are indispensable as a rule. We know of a row of Sugar Maples growing on the west side of a large field, and east of that for forty to sixty rods wheat will, after severe open winters, turn out much heavier than beyond that line. The row of trees breaks the force of the wind and scatters it. A Strawberry plantation on the east side of wood land does not heave, while away from its protection plants heave badly. We are planting rows of the Russian Mulberry on west and north lines of our grounds, as they grow so rapidly.

AN OLD ORCHARDIST says he has trimmed Apple trees every month in the year and considers June the best time, as wounds readily heal then. The next best time is November, March being the worst month in the whole year, as the cut bleeds badly and the under bark rots. Water sprouts should be pulled off from June to September, but never cut off from January to April, as two or three will come out where one was cut off. He says he would cultivate young orchards five to six years after setting and manure broadcast every other year. Trees should not be grown permanently nearer than 40 feet. Apples are later and drop from trees less in grass than in cultivated land.

TO MAKE SUPERPHOSPHATE. Crush bones and put into diluted sulphuric acid of sufficient strength to dissolve them. A layer of plaster under and over will absorb the ammonia when dissolved. A good way to use is to mix thoroughly with fine sifted coal ashes, (not wood ashes), or fine dry earth, and scatter in where plants are set or on the surface and work in.

MULCHING WITH STONES may sound strange and yet it is very beneficial. The best Strawberry crop we had on our grounds one exceedingly droughty season was in a field almost literally covered with cobble stones from the size of a butternut to a cocoanut, and when a boy we always found fine crops of Raspberries and Blackberries on bushes growing out through stone heaps, and better crops of Apples on trees having a pile of stones around them than those growing in sods, and, too, one of the best Corn crops in this section of the country one very dry season was in a field almost covered with cobble stones. Does not this prove their value as a mulch? So we say, don't be afraid to plant small fruits in a stony field.

STRAWBERRIES AILING. We have letters from different parties asking what is the trouble with their Strawberry vines; that they seem to blight and roll up and die. Some say by close inspection they find a small minute worm. It is the varmint commonly called "Leaf Roller" or "Strawberry worm." He does his mischief in hot, dry weather. They make a plantation look as though a fire had run over it. When living in Indiana we had our Strawberry plantation entirely used up and destroyed by this pest. The best remedy we ever tried was to scatter over the bed straw or hay, just thick enough to cover plants from sight and burn it over. This should be done right after fruiting season. This not only destroys the worm, but also weed seed and all weeds, and is also a remedy for Strawberry rust.

CORN FODDER AS A MULCH. Yes, it is excellent, especially if run through a feed cutter of sufficient power and capacity.

EVAPORATED RASPBERRIES. We have just sold our Black Raspberries (evaporated), part of them hand picked and part harvested, for 24 cents per pound net, to a Chicago party. We sold our Red Raspberries early to a Philadelphia party for 30 cents net. They are now selling for 38 to 40 cents per pound net, which is as good as 8 cents per quart net for the fresh berries.

SITE FOR THE ORCHARD.

Mr. Geo. J. Kellogg, a well known horticulturist of Wisconsin, says many of the orchards in that state are on the wrong side of the hill—they should be on the highest, driest, poorest, clay timber ridges with our northern and eastern slope. Never on the south and southwestern side of a hill, and no protection on the north and east, and with a low windbreak on the southwest. Never plant on a gravel or sand knoll without clay or limestone within four feet of the top. If you must plant on low, level black loam, plow as deep a dead furrow as possible where each row is to stand, then fill this with stone with an outlet if possible, as drainage, then plow back and raise as high an edge as possible where the trees are to stand, and if you have an outlet put a tile drain half way between the rows of trees.

We clip above from the Journal of Horticulture, and are reminded by it that many farmers in Western New York find that the

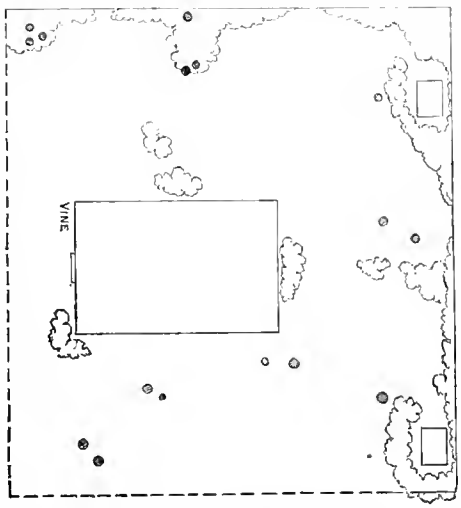


Fig. 5. Plan for the improvements shown in Fig. 6, by the planting of Shrubs. Highway on two sides.

best use to put their west and northside hills to is Apple orchards. These locations keep the fruit back from early blossoming and thus save the crop from destruction by late spring frosts and from cold northeast storms that we have many times in late spring.

MANURING SMALL FRUITS.

All the animals that die a natural death, all the butcher offal and such other offensive matter as accumulates about a farm *should be buried in the patch of small fruit*, between the rows. Last summer our Raspberries were a sight to behold, both in size and quantity, and of the best flavor. Yet it would be hardly proper to mention to sensitive ears the animal matter in different forms that the plants had chemically transposed.

The above we take from the Weekly Tribune, and wish here to protest against such indiscriminate and dangerous advice. We are not told in what proportion to apply this offal, or how. When applied direct and in large quantities it would produce such an excessive and unnatural growth as to make the plants unproductive and too tender to withstand winters in most sections. No better fertilizer can be used, but it should first be mixed with four times its bulk of earth and thrown over two or three times for one season, and then applied at the rate of not to exceed a bushel to the square rod and then only on poor soil.

RUSSIAN APPLES.

We take from the report of the Minnesota Horticultural Society the following items in regard to Russian Apples, in the trade of which there is now such a "boom." Mr. Tuttle admitted that blight was the great enemy of the fruit, and that those sorts not killed by winter did not bear much. He exhibited 75 varieties. O. F. Brand exhibited 65 sorts in his orchard, mostly large enough to bear, and he stated that when the Wealthy of the same age bore a bushel and a half to the tree, not one of the Russian varieties bore over half a bushel. He said that most of them blighted of those that remained, and the rest did not bear enough only to make up a collection for a fair. Pierce, of Minneapolis, reported difficulty and described a twelve year old orchard with twenty-five varieties which had borne well, and some of the fruit of fair quality. J. E. Corlett, of Iowa, had tried a hundred varieties of the older sorts, and lost all, and his only hope was in the Russian. Secretary Hoxie of the Wisconsin Experimental Station had found that not more than one in three of the Russian Apples was as hardy as the Duchess of Oldenburg, 57 per cent of the former and only 10 per cent of the Duchess dying. Peter M. Gideon said the true road to success was in crossing the Siberian Crab with the common Apple, and he had worked on that tree ever since the production of the Wealthy, 23 years ago, and the results had surpassed his strongest hopes in more than twenty first-class Apples. He expected a great deal from his 20,000 select seedlings, not yet fruited. He had tried many Russian sorts and the blight destroyed all but three in one orchard; the fruit of these were worthless. He got 230 more and the blight destroyed them.

ANSWERS TO SOME CORRESPONDENTS.

W. G., of Ohio, enquires how we manage to keep grubs away from Peach trees. Simply by giving the trees once a year a good coat of whitewash, in which we put a spoonful of salt and carbolic acid to a 14-quart pail of the whitewash, and also scatter a spoonful of salt all around the tree an inch or two away, but not up against the body of the tree, say twice a year, once in April and August.

J. K. enquires if Strawberries, pistillate and hermaphrodite sorts, will mix or run out if planted together or near to each other. If the question has reference to the fruit mixing so as to be different in its character, we answer no. Fruit mixes or changes only through the seed and by planting the same. They will not run out by being mixed together, but the sorts will so run together and intermingle that it will be impossible for any but an expert to tell one from the other. Sometimes one sort will be a more rapid multiplier and increaser than the other and in this way run out the other sort.

Another correspondent enquires how we get rid of gophers. Simply by mixing strychnine or arsenic with meal or sugar and then taking a quill and making an opening into their runway, depositing some of this.

J. S. R. enquires if the Pear is as long lived on the Quince stock as on its own. We can only say that we know Dwarf Pear orchards and trees fifty years old that are vigorous and productive, and that show no signs of failing. These, however, are growing in a strong, heavy clay soil, and have made such a growth that one could hardly tell them from standards only for the peculiar shape and growth. If planted deep the Pear stock will take root.

Samuel Williams. Yes, you can grow Peaches and small fruits in a young newly planted Apple orchard for twelve years, and then they can be cleaned out and the land given to the Apples.

Ralph T. No better time than this to scatter manure broadcast over your lawn, and early in spring rake off all the coarse material. Yes, bone dust is one of the best and most lasting fertilizers for the lawn. Yes, Strawberries may be mulched now the same as the lawn and treated in the same way in the spring.

In answer to another correspondent as to the cost per acre of small fruit setting, we would say: It requires 10,000 Strawberry plants to the acre; these can be had for $25.00. The cost of setting need not exceed ten dollars. Raspberries, 2,000 to the acre. Cost of setting five dollars and of plants $12 to $15. Of course, after you have got one plantation out you will get all the plants afterwards you require from these, and hence no cost of plants after the first year. It will well pay if you have land south favorable for Peach growing to plant it out and give a reliable party the use of the land and crops he may grow from it to take care of the trees till they come to bear.

A Neglected Old Favorite.—Reinwardtia (Linum) Trigynum.

Sometimes the chase for novelty in ornamental plants leads the pursuers from that which is old and meritorious to new things of really less intrinsic worth. Among the good old plants which to a certain extent have thus been displaced the subject of the annexed handsome engraving, Reinwardtia (or as it is more commonly known Linum) trigynum, stand conspicuous.

This plant is a handsome shrub of free growth, but dwarf in stature, with smooth entire leaves and large bright yellow flowers disposed of in racemes. It is a native of the mountains of the East Indies. It is suited to greenhouse culture for the period subject to cold and frosts, but during the summer it may with advantage be grown out-of-doors in the border lifting the plants in September.

But to those having a greenhouse ranging in temperature from about 50 to 60 at night in the winter, this plant will be found to reach its highest degree of usefulness when treated as a winter flowering plant. Thus employed, and if grown into good thrifty specimens, the plants yield a continuance of their exceedingly gay blossoms from Fall throughout the winter months.

For this purpose either old plants or young ones raised from cuttings the spring previous should be used. The cuttings for the latter should be taken from the strongest points of old plants, and inserted in a close frame in April for rooting. When rooted they should promptly go into pots and be brought along in a moderately warm house until established in five or six inch pots. When the plants are designed to be grown to their best for winter flowering they must be brought along continuously in pots.

The most suitable place for winter blooming plants during the summer is in a frame where air can be freely admitted. The plants like sunshine in plenty, but if they can have shade at midday from the more intense rays of the sun it is an advantage. During the time of growth in young plants, and in fact at all other times, pinching should be frequently done to induce a compact shape. With a little careful attention in this respect plants of great beauty may be raised.

Being a mountain plant the Reinwardtia can submit to almost any kind of treatment better than that of over-watering at the root. But while this is to be studiously guarded against, both by providing good drainage for the pot and by the judicious use of the watering can, yet this rule must not be forced into the other extreme of withholding moisture unduly. The fact is the plants thrive best in a rather moist atmosphere, hence to syringe them morning and afternoon is found to be good treatment. Another fact that calls for rather free syringing is that the red spider, which is one of this plant's most persistent enemies, can by this means be readily kept down, a matter of much importance. No plant can thrive if infested by this pest, the common attendant of a dry and heated condition.

Plants of this species of Reinwardtia may be procured from such of our leading shipping florists as Robert Halliday of Baltimore, John Saul of Washington, and we presume of others. We observe that the plant is still offered under the former name of Linum trigynum in some catalogues.

Chrysanthemums That are Grown About Boston.

BY A BOSTON FLORIST.

As the time is at hand when the young Chrysanthemum plants that are to flower next season should be started, a few notes on the finest varieties shown at the last Chrysanthemum show of the Massachusetts Horticultural Society may be of use to many cultivators of this flower.

The increase in number of varieties shown was quite noticeable, especially among the Japanese, and it must be admitted that it is to this class that we owe, in a great increase, the brilliant displays of color in the Chrysanthemum shows of to-day.

Prominent among the older varieties of Chinese shown in the various collections of plants were Mrs. W. Haliburton, M. Roux, Mabel Ward, Mrs. George Rundle, Mr. George Glenny, Christine, Jardin des Plantes, Mrs. Forsyth, Prince of Wales, Mrs. Sharpe, Baron Beust, Jeanne d'Arc and Brazen Shield; and among the Japanese, Wm. Robinson, Beaute de Toulouse, Gorgeous, Cullingfordii, Gloriosum, Fair Maid of Guernsey, L'Incomparable, Fanny Boucharlat, M. Boyer, Source d'Arc, Brasrouge, M. Paule Fabre, Belle Paule, Margot, Mr. Delaux, Mrs. C. H. Wheeler, Tokio, Comte de Germany and Flambeaux. Among Pompons were Brilliant, Mr. Astie, La Fiancee, Salamon, Golden Bedder, Buttercup, Freemy, Soeur Melanie and Antonias.

PLANT OF REINWARDTIA (LINUM) TRIGYNUM.

With the exception of Nahanton, Chinese, and Mrs. Gane, Pompon Anemone, all the new varieties shown were Japanese. The former is a large, finely incurved flower of lilac pink color with white center; it has a fine sturdy habit with erect branches, and is free-flowering. The latter is a pure white Anemone of medium size and very perfect in form; a free bloomer and strong grower, with rich, dark green leaves, which set off its pure white flowers to great advantage. A plant of this variety, five feet through and two and one-half feet high, took first prize as a specimen Anemone flowered sort.

The best new ones among the Japanese were M. Freeman, H. A. Gane, Pres. Hyde, John Webster, Enchantresse, Mlle. Melanie Fabre, Mlle. Paule Dutour, Domination, Mad. Marie Clos and Blanc Precoce.

M. Freeman and Mlle. Melanie Fabre are much alike in general effect, and are both remarkably fine varieties in every way; they both have a strong, compact and free flowering habit and are similar in color, a rich rose pink, the latter having a slight yellowish tinge that the former does not; and while the flowers of M. Freeman are very large and are considerably incurved at first, those of Mlle. Melanie Fabre are never so and are borne in immense clusters. H. A. Gane is another fine, bright, pink variety of very strong and free habit.

Pres. Hyde without exception was the finest yellow variety shown. It is a remarkably free bloomer with large full flowers of the richest yellow; it has a strong and healthy habit. In its peculiar color there is nothing to compare with Enchantress; a full, feathery flower of a clean lilac pink color; remarkably free flowering and dwarf in habit.

Domination is a very large, full double white flower with long, straight petals of great substance. For so large a flower it is very strong and free in habit.

Mlle. Paule Dutour, one of the latest French varieties, is likely to become a great favorite. It has a strong, erect habit, with large, full, double reflexed flowers, pure white in the center, with the tips of the petals deep pink; a remarkably free bloomer.

Mme. Marie Clos, another French variety, introduced at the same time as the last, is somewhat in the way of Mme. C. Andiguier but of a much deeper shade. It has a good habit and is free blooming.

Blanc Precoce, also one of the latest French varieties is sure to be widely grown. It is free flowering, full double white flower with twisted petals, of good habit and great keeping qualities; the plant shown was in good condition and had been so for nearly a month previous.

In the class for trained standards there was but one exhibitor, Mr. William Martin, of Milton, with four plants, but these were the finest ever exhibited in Boston. They had stems ranging from five to eight feet in height, supported by but one stake, and compact heads three and four feet through. The varieties used were Jardin des Plantes, Grandiflora and Fair Maid of Guernsey.

It will not be out of place to make special mention of the flowers shown by Mrs. J. M. Woodice, of Worcester, as they showed what can be done in raising Chrysanthemums without the aid of a greenhouse. Some of her flowers were equal to any shown. Edna Craig, Sunlight, Domination, Mrs. C. H. Wheeler and La Triumphant were all fine.

One of the most interesting features of the exhibition was a collection of Chrysanthemums recently sent from Japan, and flowered and shown here for the first time by E. Fewkes & Son, of Newton Highlands, Mass. Many of the varieties were decidedly unique as well as beautiful, notably the variety named Mrs. Alphonse Hardy, which is probably the most distinct and rare Chrysanthemum known. It is a pure white, full double flower, with the outer surface of the incurved tips of the petals thickly covered with a cotton-like pile.

Another peculiar form among them, called Medusa, was one with very long, drooping, ribbon-like petals resembling the flowers of the White Fringe tree. There were several other forms more fantastic than beautiful, but the varieties named Mrs. Tattler,

Emmie Ricker, Neesima and Lilian B. Bird were very distinct and of rich and rare colors, especially Mrs. Tattler, a large double flower composed of long feathery petals of a very clear shade of rose pink; and Neesima a very full flower of great substance and of the richest orange yellow color.

About Brick Flues.

L. B. PIERCE, SUMMIT CO., OHIO.

My experience with sewer pipe for a greenhouse flue was very unsatisfactory from two reasons. One was the difficulty cleaning, and the other from expansion and contraction, which kept the joints in a more or less leaky condition.

I have built a number of brick flues, and the following is the way my present one is constructed. The ground was first graded and then two parallel strips of fence boards laid down. On these pieces of brick were set edgeways. On the bricks I laid a floor for the flue, of burned clay slabs twelve inches wide, and are made of sewer pipe clay mixed with one-fifth sawdust, and are used, I believe, in constructing fire-proof buildings. They have a rebate of one inch at each end, so by reversing every other piece they lap by, and prevent the mortar dropping out, which it is sure to do with a floor made of brick. On this floor, which has a clear space of four inches underneath, I make the sides of the flue of three bricks on edge. The two lower courses are set perpendicular, while the upper one is inclined inwards one inch, making the upper edge of the flue six inches in the clear, and giving the eight inch brick top a bearing of one inch at each end.

It is not necessary to get a mechanic to build the flue if one has a little gumption. To build it rapidly and workmanlike a couple of forms to build against are needed. I take four pieces of wood twelve and one-half inches long and three wide. One end is tapered so as to be but two inches wide, commencing four inches from the end. To two of these pieces a straight board one-half inch thick, eight inches wide, and forty inches long, is nailed with one four inches wide at the side of it, on the beveled part. Another is made like this, and the two together separated by a bit of inch board, are just the form of the inside of the flue. The brick are rapidly laid up against the outside of these forms, and when the end is reached, the bits of board are removed and the forms slipped along another length. When every thing is ready, six feet an hour can be built at a cost of twenty three cents for material per foot. The top is covered with a single course of brick laid crossways. A flue constructed in this way with a return is large enough to run a house

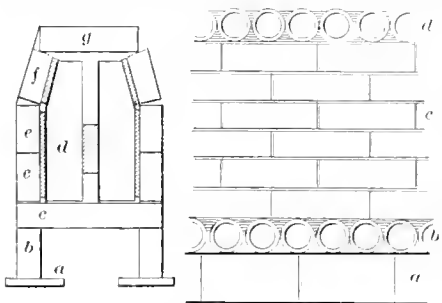


Fig. 1.

Fig. 2.

Fig. 1. a, Board support. b, Bricks on edge. c, Flat tile. d, End of forms with separating board between and half inch sheeting on outside. e, Two courses placed perpendicular. f, Slanting course. g, Covering. Fig. 2. a, Brick on edge. b, d, Three inch Drain tile. c, Brick laid flat.

LAYING UP BRICK FLUES.

9x60. My furnace is long enough for four foot wood, with grate bars two feet long; it is 12 inches wide and 15 high. I burn part bituminous coal, and have to clear the flue about three times in a winter. To do this I take a reamer bit and bore a hole at the upper corner of a brick on the lower tier. Then with a compass saw, saw out and remove the brick. Then with a stove cleaner, with a handle 4 feet long, clean four feet each way, raking the soot into a dust pan. Another is made eight feet farther, and so on. Before replacing the brick I put about a peck of carpenters' shavings in the flue and saturating with coal oil, touch a match to it. It blazes with a roar and a whiz, sweeping all remaining particles of soot up the chimney, or distributing it evenly on the floor of the flue. I begin at the end of the flue nearest the chimney, stopping each opening as I go along. In this way a flue can be cleaned by letting the fire get low on any sunshiny day without tearing down the flue or filling the house with gas.

An acquaintance heats a house 16 x 50 with a return flue, the inside of which measures 8 x 15 inches. The brick are laid flat ways and the top and bottom consist of three inch drain tile 12 inches long laid crossways. This makes a heavy flue with a light top, uniting the capacity of radiating a large amount of heat at night, with the ability to radiate it rapidly when the fire is made in the morning. Dealers in fire bricks can furnish tiles two inches thick and 12 x 15 inches large, and these are proper for a furnace cover. They will last ten years.

The throat of a flue should be built at an angle of not more than 23° with the horizontal, and then the light ashes that lodge there can be removed with a long handled scraper from the furnace door. It sometimes happens that a flue refuses to draw on the evening of a very cold night, or Sunday mornings, or some time when it is very inconvenient to clean out. At such times a passage for the smoke good for twenty-four hours can be made by placing the muzzle of a fowling piece heavily charged with powder at the throat of the flue, and discharging it. I have heard it stated that a handful of zinc scraps thrown occasionally on the red-hot coals will prevent the formation of soot by bituminous fires, but never having the zinc, I have not been able to test it.

Chinese Primroses in the House.

E. L. P.

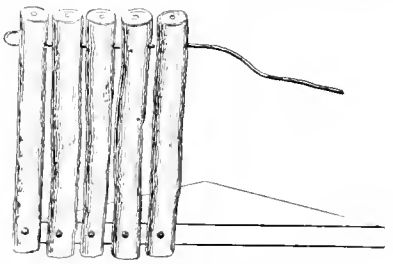
There are, I think, no plants so valuable for window culture or more easily grown, if the right conditions are observed, than the Chinese Primulas. They are unequaled as winter bloomers, giving a succession of flowers throughout the season, and are prized both for the beauty and the delicate fragrance of their foliage and flowers. Many seem to think Primulas are successfully propagated only in a greenhouse, hence we find amateurs often reluctant to attempt their culture.

The single varieties are easily grown from seed, and range in color from pure white to dark crimson. There is quite a diversity in the foliage also. Some of the flowers are crimped or fringed, and others of the pink or crimson sorts are curiously mottled and striped with white. The seed should be sown in June or July, and soil prepared as follows: Take some leaf mold, about twice as much loam, and enough sand to make the whole light and porous. Mix all and pass through a fine sieve; fill a small shallow box to within an inch of the top, and press down evenly. Then after watering the earth thoroughly, the seed may be sown on the surface with the lightest possible covering of soil, and kept constantly moist. It is best to place a piece of coarse brown wrapping paper on the soil to exclude light. If a fine rose watering pot is not available, water as needed may be gently poured on the paper, which should be lifted at night to give air and entirely removed as soon as signs of the plants appear.

When the plants are large enough to handle they may be transplanted to another box, and when still larger put into the pots in which they are to bloom, as they are sure to do the first winter. After blooming the plants throw out sets which may be taken off and treated the same as other cuttings. Those that have bloomed indoors should be set out in a shady place in the summer, and if flower buds appear pinch them off. Never allow the sun on the seed pan or the plants.

Home-Made Hanging Baskets.

To make a hanging receptacle for plants, no plan is easier than that shown in the accompanying figure. The materials may be any small sticks, either with the bark on or not, for the sides, and an inch board sawed



Home-Made Hanging Baskets.

to any desirable shape for the bottom. In the engraving the bottom is shown to be of a triangular shape.

In the construction of such a plant holder the sticks for the sides, may be from six to ten inches in length. The tops may be left square as here shown or else be pointed or shaped as fancy may suggest. Two inches from the top of each piece a hole is made and through these holes together a stiff wire is drawn for giving strength to the top. The pieces are nailed to the bottom with common brass or white metal nails. Three or four pendents of wire and attached to a ring or hook at the top should be fastened to the horizontal wire at equal distances apart for supporting the affair.

In filling such a holder it should first be lined with moss the green side out. The mode of construction described is also adapted to the making of tasteful window and veranda boxes, as well as of the earth receptacles for lawn vases.

555. **Pine for Shelter Belt.** Plant a double row if possible, about twenty-five feet apart, and let the plants be placed from four to five feet apart in the row according to the height of the trees, removing every other one as soon as they commence to touch each other. They can be planted at any time after the middle of April, and until growth commences. There will be no necessity to cut them back in transplanting. I would, however, advise your correspondent to plant Norway Spruce for shelter belts, instead of the White Pine.—C. E. P.

606. **Quinces on Muck.** They will do fairly well in such a situation, provided it is not too close in texture. But for my part I would not plant in such a place. I would rather give them a good garden soil, where with a little attention as to trimming and manuring, a satisfactory crop will be ensured annually.—C. E. P.

592. **Scraping Tree Bark.** Old rough bark affords a harbor for insects, and it is decidedly beneficial to scrape it from the trees. The scraping, however, must be very carefully done, so as not to injure the living bark.—C. E. P.

587. **Musk Melon for Forcing.** The early Hackensack is the best variety and should be started in a hot-bed about the first of May. To start them procure a quantity of three-inch pots (the precise number depending upon the number of hills to be planted) and fill with ordinary potting soil. In each pot place four or five seeds, as far apart as possible. Or else procure a quantity of sods, and cut in pieces four inches square, on these inverted the seeds can be placed precisely as advised for pots. Then the pots or sods can be placed in the hot-bed, where water and air should be carefully given as required, and as soon as the plants attain their rough leaves they should be gradually hardened off and planted out towards the end of the month. If the planting out is carefully done the plants will not be disturbed or suffer in the least.—C. E. P.

Arbor Day Song.

O Song for the beautiful trees,
O song for the forest grand,
The garden of God's own hand,
The pride of his centuries.
Hurrah! for the forest Oak,
For the Maple, the forest queen,
For the lords of the emerald cloak,
For the ladies in living green.

A song for the Plane, the Pine,
And for every tree that grows
From the desolate zone of snows
To the zone of the burning line.
Hurrah! for the Beech tree trim,
For the Hickory stanneh at core,
For the Locust, thorny and grim,
For the Silvery Sycamore.

So long as the rivers flow,
So long as the mountains rise,
May the forests sing to the skies
And Shelter the earth below.
Hurrah! for the beautiful trees!
Hurrah! for the forest grand,
The pride of his centuries,
The garden of God's own hand.

—*W. H. Venable.*

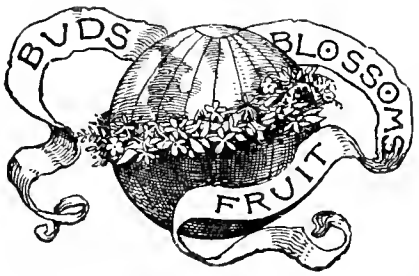
Easter Lilies.

The Easter Lilies, tall and slight,
With golden anthers gleaming,
Within their waxen bosoms white,
Of holy things are dreaming,
And stirring softly, say apart:—
"Blessed are the pure in heart."

—*Jessie F. O'Donnell in Chautauquan.*

The sky was bright and glad the day,
To gentle spring he sang a lay;
Next morning when he awoke he found
A foot of snow upon the ground.

—*Boston Courier.*



Peas will sprout at 45 degrees.

Start in with a "slick" dooryard.

Raspberry plants are often set too deep.

If only Her Majesty Rose was more fragrant.

Raised flower beds suffer first from drought.

Arbor Day. Share in making it a great success.

Cold April drafts on indoor Roses invite mildew.

To have extra-fine flowers remove half the buds.

For quality cut Asparagus at the ground's surface.

Kesp the manure near the surface; its strength will go down.

Liquid manure would now prove acceptable to many pot plants.

The importance of having a finely pulverized seed bed is yet too much underrated.

"Brutus," the cardinal tinted Geranium, is believed by some to be the coming bedder.

Plants for schools or school children are specially offered by some dealers. This we like to see.

Some use can be found for the Virginia Creeper on every place. It is superb for the veranda.

Plant Trees. If you can't afford to buy large ones procure small ones and nurse them yourself.

"Best one of a hundred varieties" is what a Maryland grower of Watermelons calls Kolb's Gem.

Mocking Birds and Grapes. In this State (Florida) mocking birds are very destructive to Grapes.—*W. C. Steele.*

Without extra care as to summer watering terraces are unsatisfactory as ornamental features of the lawn in the average season.

In arranging a mixed border the object should be the production of masses and sheets of bloom in the dwarf plants and picturesque groups with the larger plants.

Brussels Sprouts. Do you grow them? If not you miss a most tender and delicious vegetable. The culture is as simple as that of Cabbage or Cauliflower, except that the plants are not quite so hardy. The small heads on the stem are the edible parts. To be served as one does Cabbage or Cauliflower.

Native Orchids. Why long for the costly exotic species, when our native sorts are both ornamental and interesting. If lifted in early spring, and carefully potted without delay, Cypripediums or Lady Slippers will succeed without difficulty. Use peaty soil, water freely, and grow in slight, almost steady shade.

Cherish the Toads. "I honestly think," says T. D. English, "that a healthy and able-bodied toad, of industrious habits, will get away with and digest his own weight of insects during twenty-four hours. If you be of an insecticidal turn of mind, turn out by daylight and watch the toads getting breakfast. It is entertaining."

Women and Horticulture. We do not now recall a single instance of a woman who has entered into the field of flower, vegetable and fruit growing for profit having failed at the business. We know to the contrary of many who have in these pursuits achieved the most pronounced success. Among Buffalo market gardeners many a woman furnishes the brains that makes the garden work decidedly profitable.

The double-pointed fence nail shown figured on this page is as effective in rendering a fence perfectly unclimbable as it is uncompromising in its character. The engraving is made after an English pattern, and which is described as being so formidable that it cannot be mashed by a mitten or coat. Its use will be suggestive to anyone who, especially in a village, has fruits to protect. *A* is the hammerhead, *b* the chisel edge which enters the wood.

Increase the Circulation. If each friend of POPULAR GARDENING AND FRUIT GROWING would favor the publishers with the names and addresses of other friends who cultivate fruits, flowers and vegetables, a specimen of the paper would gladly be sent to each with a view to their becoming subscribers. Such an act would also be much appreciated on our part. A suggestion: One dozen names or more can easily be brought down on one postal card.

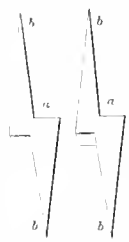
Insect Powder Plants. Pyrethrums, (*P. cinerafolium and P. roseum*) from which the safest of all insect powders is made, can easily be raised from seed, and this may be procured from many dealers. But the plants which are perennial in nature are not hardy enough to stand our winters except in favored spots; they could be wintered in cold frames. The powder consists of the flowers finely ground, but the unground flowers made into a simple tea are effective for destroying scale and many other insects.

Rawson on Market Gardening. This work deals more especially with the methods in vogue in that center of good gardening, Boston, Mass. It is therefore adapted to latitudes somewhat further north than those from which have come most of the other American works on this subject. Its author, Mr. W. W. Rawson, is the most extensive market gardener in New England, and his successful gardens located at Arlington have attracted wide notice. Those who are interested in vegetable growing will find here facts collected from a long experience, which can hardly fail to be valuable to the reader. Two hundred and eight pages. Price, $1, postpaid. The book can be furnished from this office.

Hyacinths in Washington Territory. Ten years ago a friend in New York sent me some Hyacinths of his own importing. They were fine bulbs and bloomed beautifully from the first, but have improved both in size and number of bells, and continued to hold that improvement. Some multiply fast, especially some shades of blue and red, each producing two or three blooming bulbs. The offshoots make blooming bulbs in one, or at most, two years. Some of the finest, however, increase very slowly. I take them up every year as soon as the tops are dead, and keep in a cool dark place till October, making the beds up anew each year, and changing location occasionally; but some who never move them have very good flowers. Hardy bulbs of all kinds do well here, especially Lilies.—*Fanny E. Briggs.*

Deep Covering for Peas. I, with my neighbors, always had trouble in having our Pea vines unproductive, and I concluded it was the fault of the planting. Having been accustomed to shallow covering on my seed, I concluded finally to make some drills deep and some shallow. The shallow drills of course were up the soonest, but the yield of the others was 50 per cent more than the former. The Pea requires considerable dampness, and by deep planting the ground at the roots retains the moisture, which is impossible by shallow drilling. I now always have Peas when in fact my neighbors' crops fail during a season that is dry. I have tried the two methods and know from experience that shallow planting is not profitable for the kitchen gardener.—*J. W. P., Zaliciople, Pa.*

Rustic Work Material. The roots of the Laurel are very useful for trimming material. Those of the Sweet Briar are also suitable. They are gnarled and very much twisted, but, when perfectly cleansed, make a fantastic ornamentation. A coat of copal varnish is what is needed after they are worked up for giving them a handsome look. The roots and boughs of the Wild Grape-vine afford excellent material for rustic decoration. The bark should not be taken off unless very ragged, when it should be peeled away with care, not removing any more than is necessary. By peeling this way the stem becomes varicolored. In any case where a deeper color than the natural wood is desired take two ounces of gum asphaltum and dissolve it in half a pint of turpentine or coal oil. Apply this with a brush, two coats if one is not dark enough.



Double-Pointed Fence Nail.

Raising Elms from Seed. A good way is to dig over and rake smooth, about the middle of May, a large circle round some Elm which abounds in seed. This should be first ascertained, for the Elm does not produce seed every year. After the seeds have fallen they must be raked in, and within ten or fifteen days the young plants will appear. It would be best to manure the ground or cover it with rich loam previous to the falling of the seed, which would insure an abundance of plants. They will grow several inches high before the autumnal frosts kill the leaves, and then, or in the following spring, they may be transplanted into the nursery. The seeds can also be swept into piles and then collected in baskets. Then they can be at once sown in drills, and will grow five or six inches in height the first season.—*Gen. Dearborn.*

Fitting Strawberry Ground. A recent article on planting Strawberries leads me to make a suggestion; that, is to fit all the ground wanted at once as early in the season as the ground is fit to work. First plow carefully, then harrow thoroughly, and float down with a clod crusher. Fitted in this way, the planting can be done at any time up to May 15th, with a pretty good certainty of finding a moist firm soil to put the roots in. If the weeds have started a little, scrape them away with the trowel, and the next day hoe between and around the plants, cultivating through the rows as soon after as possible. The main trouble with late setting of Strawberries is that the ground is imperfectly fitted in a drying day, after the spring rains are over, and the plants do not get moisture enough to commence growth. —*L. B. Pierce, Summit Co., Ohio.*

Strawberries in Florida. The Newman is not as large as the Sharpless or Jersey Queen, but it will average as large as Wilson's Albany grown side by side. It is also a much more productive and profitable variety in Florida. I have experimented carefully with the following varieties: Atlantic, Crescent, Cumberland Triumph, Capt. Jack, Chas. Downing, Countess, Daniel Boone, Glendale, Indiana, Jas. Vick, Jumbo, Kentucky, Lacon, Longfellow, Manchester, Miner's Prolific, Iron Clad, Sharpless, Sucker State, Warren, Wilson's Albany. None of these are worth planting in this state for market, and only the Indiana is desirable for general cultivation for home use. The Federal Point is a Florida seedling, but is never called Little Giant so far as I know, and I get all the nursery and dealers' price lists. It is not a large berry, and is too soft for shipping to market, and is only recommended for home use on account of its superior bloom.—*W. C. Steele.*

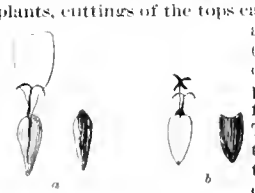
Points in Zinnia Culture. Few plants equal the Double Zinnias for making effective beds of bloom. The seeds should be sown in March or April, and the seedlings transplanted once before removing to the open ground, which should not be done until danger of frost is past. Plant out temporarily at about six inches apart, and as the first flowers appear select the finest double specimens, lifting with a ball of earth attached to the roots, remove them to where they are to flower, setting at eighteen inches apart each way. I have observed that there are two kinds of seeds in a Zinnia. One (Fig. *a*) has pistil and petal attached but no stamen, and generally

produces double flowers. The other kind (Fig. *b*) has a pistil, and a star formed stamen, which when broken off leaves the seed heart shaped; this is about sure to produce single flowers. By saving the seeds that have a petal attached I have got the flowers to come so double that some fail to produce seeds, and many only a few. —*H. C. J., Natick, Mass.*

A Sparrow Trap. Remove the sash from a window in the loft of a barn or other building. Make a box to fit the opening with a depth of eight or ten inches; make a frame to provide apartments six or eight inches square to fill the box; nail an outside cover over the whole, and bore a two and one-half inch hole through the cover into each compartment, then fix a folding shelf under each row of holes for the birds to alight on. This may be done by using thin boards three or four inches wide, fastened with leather hinges and driving a ten penny nail in the edge of the box under the ends of each shelf. All is now ready, set the box into the window frame and leave it for the birds to "move in," which they will soon do. When the colony appears to be pretty well established and in a thriving condition, ascend to the loft after dark close the holes with the hinged shelves and let vengeance sleep until daylight. Then sink the box in the river, afterwards emptying and returning it for further work.—*Samuel L. Dagwell.*

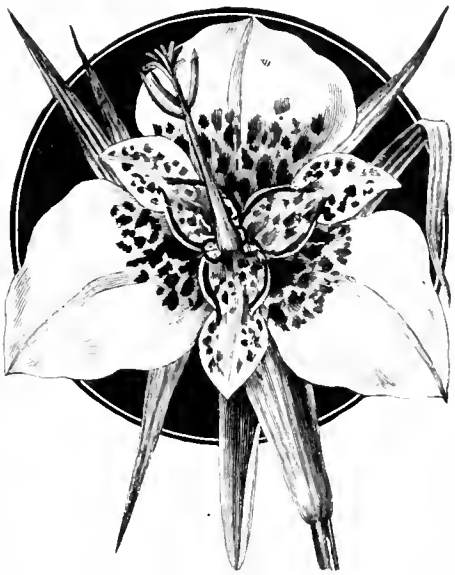
Two Garden Baskets. One day in early spring I prepared "a ready basket." First a pair of old kid boots were cut into narrow strips and then placed in it. Then I provided a small paper of tacks. I wound up yards and yards of string from the quantities collected about the house. My hammer, a box of nails, a pruning knife, a pair of scissors, and plenty of short sticks to tie my strings to, were added. The weather changed suddenly and I could soon work in my garden, and in the few leisure moments of my busy house cleaning days, with my basket I was ready for the Grape-vines and and other plants and bushes. Dry leather strips, tacks and knife were all at hand. I could not have spent the time to look them up. I could devote a few moments putting the strings for the vines in place, for here the stakes were prepared. All the spring my ready basket was a blessing. I now have a "weed basket." I carry it down the garden walks and tuck in stray weeds, stones or sticks that appear. I can then dispose of them all at once, and keep my beds in spic span order.—*Sister Gracious.*

Marvel of Peru Culture. The seed can be sown early in March in a well drained pot or pan filled with light, loamy soil. Sow thinly, cover with a quarter of an inch of loamy soil, and place in a warm, moist situation as close to the glass as possible. As soon as the young plants are strong enough to handle they should be potted off into three inch pots and grown on until the weather becomes warm and settled, when they can be planted outside in a deep, moderately enriched soil and sunny situation. The young plants should not be permitted to become drawn while small, so to guard against this they should be removed to a cool, airy situation as soon as the pots become well filled with roots. If the seeds do not furnish an ample supply of plants, cuttings of the tops can be put in sand, and when rooted, (which they will quickly do) treated precisely as advised for seedling plants. The roots can be taken up as soon as the tops have been destroyed by frost, placed in barrels and stored in a cool, dry, frost-proof cellar for another season's use. —*C. E. Parnell.*



Zinnia Seed.—See Points in Zinnia Culture.

The White Tiger-flower. One of the easiest classes of plants to cultivate is that embracing Tiger-flowers or Tigridias These are summer bulbous plants; that is the growth springs from a bulb, which being not hardy in the North (although Mexico is the home of the type), requires to be lifted each fall and be planted the following spring. The treatment is therefore almost identical with that of the Gladiolus and Tuberose. But our object now is to call attention to the comparatively new White Tiger-flower, an engraving of which is annexed. This one in color differs from the prevailing colors of yellow and orange peculiar to the better known sorts, by having pearly-white or dead-white in the main parts, with a yellowish ground towards the inner half of the petals, where the brilliant spots that are distinctive of this genus are located. These spots in the subject of our sketch are of a reddish brown or chestnut color, and well entitle the plant to be called the White Tiger-flower. Its flowers are of good size, and from strong bulbs are produced in succession for a long time. Whenever this variety well grown has been shown side of the other species it has attracted marked attention. Concerning the management of the bulbs, they should with other Tigridias be planted about the middle of May, setting them about two inches deep in any rich garden soil. The bulbs and offsets require to be lifted in October and dried, being careful not to expose them to frost while drying or at



The White-Flowered Tigridia.

any time. They are best wintered in dry sand or sawdust. In storing them away one thing must be specially guarded against, namely, mice are very fond of the bulbs, and if they are exposed to their ravages not many of them will be left for use in spring.

Popular Gardening and the Tree Agents. Careful readers of this journal know that we do not denounce all tree agents. We have, it is true, often advised against dealing with agents who are strangers—those who cannot give satisfactory references as to their reliability, or of their connections with trustworthy nurserymen. But for the intelligent and honest agents, of which we know there are many, we entertain only the kindest of feelings. Among such are to be recognized many true missionaries of horticulture, whose work in the developing of a wide interest in the planting of fruit and ornamental trees is worthy of all praise. Were it only the case that this class was not, in many parts of the country, actually far outnumbered by that rascally set who live through perpetrating the most outrageous swindles on the people, we would feel less often called upon to place our readers on their guard. As it is we must continue to say, beware of the strange agent who cannot furnish references that are entirely satisfactory. It is a chief characteristic of a swindler that he is a stranger, for he must needs seek new fields where he is unknown, with each recurring season. The agent who confines his work mainly to the same section year after year is the man who usually may be trusted. Such men hardly need a special recommendation at our or anyone's hands, for with becoming well known and in a sense favorably identified with the planting interests of a given region, there is no lack of good references at their command. We have in mind one agent of this kind who, although his start at the business was attended with but moderate results for a year or two, yet by pursuing his work intelligently and honestly year after year in the same section, before seven seasons had passed he was meeting annually with ten thousand dollars worth of nursery orders. This, although by no means an isolated case, is an excellent example of the good tree agent who is worthy of any man's confidence. It also affords an example for those agents to pattern after who desire to attain the utmost respectability in their profession. The secret of this agent's success lay in three things, namely, the giving of good advice looking to years ahead, the furnishing of only the best of stock true to name, and an unlimited backing of good references.

Floral Matters About New York City.

The most interesting event of late has been the Orchid show at the Eden Musee, the second of its kind. The arrangement was very tasteful, suggesting many ideas in decoration, and the entire affair reflected great credit on its managers, Siebrecht & Wadley. The use of real Cocoanut trees from Trinidad, laden with nuts, was decidedly novel, and the array of Palms, hung with epiphytal Orchids, were rich and tropical in appearance.

Two of the great attractions to Orchid fanciers were cut blooms of Laelia bella and Cypripedium Morganianum, from the collection of Erastus Corning, Esq. Both are rarities, and both are of unusual beauty; the Laelia, which is a garden hybrid between Laelia purpurata and Cattleya labiata, is the loveliest of its family. There were some plants of unusual size; one Cattleya Trianae belonging to Siebrecht & Wadley had 25 open flowers. A plant of Coelogyne cristata exhibited by Jas. Cornley, gardener to Mrs. F. B. Hays, Lexington, Mass., filled a jardiniere five feet long and two wide; it is probably the largest coelogyne ever exhibited.

Cattleya Schroederiana was another rare and beautiful thing, and there were five Oncidiums; in fact, everything in the Orchid line now in flower was there. There is no doubt that Orchids now hold a recognized place in the cut flower trade; they are used in all good work. Of course they will never take the place of Roses, but they are just as necessary, while occupying a place of their own. Decorative plants are coming to the front, too; the prudent florist will no longer trust entirely in flowers, but will use plants largely for noticeable effects. Useful Palms and Ferns that will stand some hard usage are decidedly salable.

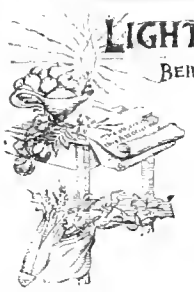
Flowering plants are being used in table decoration with very happy effects. A pretty arrangement for luncheon was of pink Primulas. A piece of green crape was laid down the center of the table; the Primroses, dropped into willow baskets, stood on this. Bulbs, Narcissus, Hyacinths and Tulips are used in this way. The Lenten season does not seem to affect the florists very much. There were some very pretty effects in decoration at a recent German. Some of the doorways had curtains of Smilax looped up by bunches of Roses. The mantels were loosely strewn with flowers, instead of having a formal bank. One high carved mantel piece was draped with Asparagus and an elaborate arrangement of Orchids. The favors were old-fashioned Quaker straw bonnets, of the style of fifty years ago; they were loosely tied together, and then filled with flowers of one color, Tulips, Hyacinths, Narcissus, etc. About the time of the Orchid show a good many fashionable dames were to be seen on the promenade wearing a single Cattleya, or a spray of Dendrobium. But as a rule the street bouquet is a single American Beauty, a few Violets, or half a dozen yellow Jonquils. The wild southern Smilax—Cape Smilax, as it is called—which at first sight rather suggests Catbriar, is indispensable in large decorations, where ordinary Smilax or Asparagus would hardly show. With it dried Palm leaves and Southern Pine are used. Any very formal effect is avoided in every decoration.

No special novelty has appeared since the holidays, unless we describe as such the dyed flowers which have been vexing the souls of the artistic. Since the ingenious originator first sent out the "Emerald" Carnation the experiment has been tried on many flowers with many colors; some of the florists go in for it very extensively. Of course it is only a passing craze, and not a very commendable one, but we are growing used to blue Tulips, green Carnations and pink Violets. So long as people will buy them they will certainly be produced.

Though pink and yellow are still the orthodox colors for a table decoration, some very dainty arrangements are being made in green and white, or green alone.

In decorating a room flat baskets of flowering plants are placed on etageres or tables. Fine Cyclamens show off well, as their foliage is so handsome. Primulas answer the same purpose, both pink and white. For yellow effects, Genista and Acacia are combined with Jonquils, or Acacia and Neil Roses. Mignonette is much liked with yellow flowers, or with pink. Mme. Cusin and Papa Gontier are the favorite pink Roses.

EMILY LOUISE TAPLIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN

The cost of cultivating Grapes in California vineyards is by Dr. Hussman put at $20 per acre; the yield as ranging from three to ten tons per acre.

Looking Ahead. Shipping and marketing at a profit requires previous preparation in making arrangement with home dealers, selecting points to ship to when the home market is over-stocked, and getting special express rates, etc.—*Society Report.*

Behold the Lilies. Ever since the weaver has applied his art, whether in silk or wool, or cotton, he has embellished his goods with representations of foliage and blossoms, and fruit, and the same is true of most all other decorations outside.

No Wine for Him. The extensive vineyardist, T. S. Hubbard, of Fredonia, N. Y., told the American Horticultural Society recently that he preferred to eat his Grapes, and not to drink the juice in the form of wine. The remark was received with great applause.

The One Thing Needful. Many a land owner who calls himself enterprising and who raises good crops forgets that with a few hours' work he could plant a dozen trees that would greatly enhance the value of his estate, and yield blessings of beauty long after he has passed away.—*Geo. M. Whitaker.*

Young People in the Society. Our young people should be encouraged to join the Society. It will not be very long before the mantle will fall on their shoulders and they should be ready to take up their work. Besides, correct horticultural practice is most easily acquired, and proper habits are more readily formed by young people in the formative period of character; therefore let us encourage the young people of both sexes to become horticulturists.—*President Reynolds, of Douglass Co. (Kas.) Society.*

Borers and Wood Peckers. The round-headed borers are being waked up at this season of the year by Guinea the woodpecker, which makes its entire meals of the larva of wood-eating beetles. I have watched them on the trunks of Apple trees in search of the borers; and have also seen them industriously pecking away there until they found the worm. The bill of this little bird will do a much nicer job than the men whom we hire to cut and slash the bark of our trees. This noble bird should not be killed; it should be encouraged by leaving decayed trees on the farm for them to peck holes in for their winter homes. —*Mr. Deming of Kansas.*

About the Dewberry. J. Stone of Iowa, in his paper on "The Dewberry," before the California meeting of the American Horticultural Society said among other things that the tip-rooting varieties are better than those which propagate by suckers from the root. The Dewberry endures drought well and does best upon sandy soil. Cultivation is the same as for the Blackberry. The Dewberry in a very cold climate needs winter protection by covering with earth. The canes should be tied to stakes or trellises. Mulching is advantageous as a fertilizer and as a protection in winter. The Lucretia and the Bartlett Mammoth are the two best varieties.

Horticulture in Minnesota. The following interesting statistics were made up from the reports of different counties in Minnesota to the Secretary of State:

	Number.
Apple trees growing, 1886	474,258
Apple trees bearing, 1886	188,955
Bushels of Apples grown, 1886	123,199
Apple trees growing, 1887	478,742
Apple trees bearing, 1887	160,926
Grape-vines in bearing, 1886	89,876
Pounds Grapes produced, 1886	206,200
Grape vines in bearing, 1887	87,171
Forest trees planted, 1887, on Arbor day	327,130
Acres planted during season	3,220
Rods planted on highways and farms, 1887	522,857
Acres forest trees growing in State	47,431

Vegetable Seeds too Deep. There is not near so much danger of loss by shallow seeding as by deep planting. I planted a quantity of Beet seed last spring and it was an almost entire failure, but where my little boy had spilled some on the surface and no effort was made to cover it up, Beets came up in profusion. All gardeners agree that one of the hardest things to do is to plant just deep enough and not too deep. The soil makes some difference as to depth of planting, but I would rather my Onions were sowed on the top of the ground than half an inch deep. Onion seed accidentally spilled on the top of the ground always grows before that which is sown.—*Mr. Kyes, before the Chautauqua Co. Society.*

Landscape Gardening and Politics. Speaking of this matter, our correspondent, N. Robertson, before the Ottawa (Can.) Horticultural Society scored a point against the patronage system. He said that often men were employed in this work, who were not qualified in any other way than in being able to exert a certain amount of influence for the powers that be. In many cases these hands were entirely unfitted for the work. This was especially so in the States. He thought that landscape gardening required a life study to assure anything like perfection. The person enging in it must also have a natural taste for it; technical training would never answer the same purpose. It took years of practical study and observation to be able to cope with the natural laws and surroundings with which the gardener came in contact, and which often baffled his judgment and experience, and unless he had a natural love for his work he could not succeed.

Vegetable Gardening. Are not good appetites, good food and good stomachs among life's greatest enjoyments? Is there anything in or out of earth, or sea, that contributes so much to that great desideratum of happiness as the vegetable garden? It is the first place in spring, the last in autumn, and the base of most pleasant remembrances during the winter, as the mind reverts from Sweet Potato, Celery and Squash pie on the table to the time of anticipation felt from seed time to harvest. Some of our fruit-growers may feel like claiming superiority for their products. I would not separate the fruits from other vegetables or make a comparison, but have them constitute an adjunct without which the vegetable garden is incomplete. One is a necessity, one may be a necessity or it may be a luxury; one is the principal food, the other mainly dessert. But what shall be said to stimulate vegetable gardening for health and profit? Our land is fast being occupied by the tiller of the soil. Our growing population is fast building great towns and cities where thousands live that of necessity must depend upon the market gardener. There is more money in the vegetable garden to-day than in the farm or orchard, or small fruit garden or vineyard. More money will be realized in the future of our state by vegetable gardeners than by any other class of soil cultivators. This fact is fast becoming apparent and must result in enterprises of great value to the state.—*E. J. Holman, before the Kansas State Society.*

Ornamentation of Public School Grounds. Dr. Richard Edwards, Superintendent of Public Instruction, Springfield, presented a paper on this subject, of which the following is a synopsis: We should plant trees in school yards for the same reason that we do anywhere, but, as a rule, will be more permanently and effectually felt if enjoyed by children, than by older persons. We should plant trees because our streams, formerly so marked a feature of prairie landscape, are drying up and being obliterated. This is due to the destruction of forests and other forms of vegetation. Trees at least equalize rain-fall; they furnish protection against violence of storms and severe winds. Trees appeal to the love of the beautiful. While older people appreciate the value of tree-planting, children can easily be taught it. Trees contribute to children's welfare at school: By furnishing harmless and pure pleasure; by contributing to the child's health; anything which helps to develop sound, wholesome bodies is at this time inexpressibly valuable. Trees furnish shelter in summer and winter, equalizing heat and cold. Trees also absorb noxious gases and help supply oxygen. They are educational, as they cultivate the senses of seeing, hearing and feeling. It is easier to learn by the sense of perception than from books. Aesthetic faculties would be educated, as in Nature we find the ideal of beauty. Pleasure health and education can be aided by teaching how to plant. Arbor day should be observed. If children plant their own trees in the school yard they will not injure them. Children learn the lesson that all worthy rewards are not obtained immediately—in short, foresight.

Improvement in Flowers. A few years ago the Carnation was much smaller, confined to a few shades of color, short-stemmed, and in every way inferior to the same flower to-day. The Verbena, that favorite bedding plant, that now forms a variegated carpet of almost every hue but golden was, when first brought into cultivation, a small flower, small cluster, and only scarlet in color. And the fragrant double Tuberose was, at first, a very tall stock with a few scattering single flowers; now the blossoms are double, much larger and numerous, with a much shorter stalk. So, also, the Hollyhock, that favorite of our mothers and grandmothers. Its tall stalk and scattered, mostly single flowers, has given place to a stalk less than a yard in height, crowded from base to summit with its double flowers of clear shades and beautiful forms. And the lovely Pansies we can grow from a packet of mixed seeds! Once they were only the little old-fashioned Johnny-jump-up. But the little daughter of the Earl of Tankerville determined to have in a bed every differently-marked Johnny-jump-up Violet that grew in her father's gardens. Seeds from her bed produced still other forms, colors and markings that attracted the attention of flower-lovers. Later English, French and German societies offered premiums for the best Pansies, as they began to be called. The improvement grew until this little flower has developed into an offspring clad in velvety-purple and gold, and mahogany, and crimson, blue, cream and coal black, pure white, and six times as large as the parent. And the Chrysanthmmm. Many of us can remember when the purple and yellow only were known, and later a white one, which was considered very fine. To-day we have hundreds of varieties of every shade but blue and black, and with petals fringed, quilled, flat, twisted, long and short, broad and narrow, incurved and recurved, double, single.—*Mrs. M. F. Stewart, before the Kansas State Society.*

Tricks of Trade.

[*President Parker Earl, before the American Horticultural Society's California Meeting.*]

One grave reason why the building up of a regular produce trade is more difficult than it should be is the irregular quality and serious imperfections of a majority of the products sent to market.

Both the dealers and consumers soon get disgusted when they find half the Peaches in a basket or half the Apples in a barrel wormy; and in the case of the Peaches find all of them green, hard, and unedible below the top layer; and even the top course seeming ripe and well colored only when seen through the delusive tarletan which is bound tight over them. A basket of green Peaches with a goodly supply of work, and with sizable specimens placed on top and then all covered tightly and beyond examination by a colored netting which makes them all appear blushing with ripeness, is a cheat and a fraud that should consign the perpetrator of the swindle to the county jail. It is only equaled by a barrel of Apples that is faced up handsomely at both ends and is filled with scabby and wormy scrubs through the middle.

I regret to say that such baskets of Peaches and such barrels of Apples are forced off upon an innocent buying public by hundreds of thousands every year. I think and hope that the most abused fruit market in the world in this respect is that best of all fruit markets of the world, the city of Chicago. I will venture the guess here of all the millions of people that have this year bought Peaches coming through the Chicago market, not one in four has had occasion to bless the grower of the fruit; and in most cases has been abjurated, if not cursed. I dwell particularly upon this kind of fruit, and this kind of package, because it is the most notable kind of example of a wide-spread attempt to deceive the buyer to be found in all our fruit marketing history.

It will not be a good exense to say that red tarletan is necessary to hold the fruit in place in the baskets, because white netting with a very open mesh will serve that purpose equally well and will not obscure the real color. And no well colored Peach can be made more beautiful by any kind of covering. Is it any wonder that first-class grocers dislike to trade in fresh fruits?

I am a fruit-grower, a fruit-packer and a fruit-buyer, and I stand here in all three capacities to protest in all the earnestness of my soul against all kinds of deception in fruit-packing. It is impolitic in the highest degree and it is unworthy of all decent men. A large dealer not long since said to me that the whole business of fruit-packing, east and west, north and south, with now and then an exception, is worm-eaten and rotten with dishonesty. My friends I be-

lieve this denunciation is far too sweeping, but severe criticism is called for.

Let us away with all studings and facings, with all deceptive coverings, with all undersize packages, with the packing of all green, half-grown, gnarly and worm-eaten fruit in any kind of packages. If we must pack it, put it on top where it will tell its own story. Let us do this, and we shall find it will pay in money, pay in the plaudits we shall win from all men, and in our own self-respect and integrity.

I should say here, and I cheerfully do say, that I believe that the Californian fruit-packers are generally far less open to criticism in this matter of straight packing than are the majority of Eastern growers. You cannot afford to pay freight on trash two or three thousand miles. Yet there is some room for improvement in the selection and grading of fruits from this pre-eminent horticultural State. In careful handling, thorough grading and unflinching honesty in packing, the man with a high standard, well worked up to, is the man who will come out best.

Horticultural Shows—Rules and Regulations.

[*From the Kansas State Fair Premium Schedule.*]

Awarding Committees. The awarding committees will be selected from the best horticulturists in this and adjoining states, with great care, but will not be made public until the fair. The awarding committee on fruits will report the varieties in each collection to which they award premiums.

Members of awarding committees are requested to report for duty on ——— at 1 o'clock p. m., and any vacancies must be reported to the director in charge by the superintendent of the department wherein such occur, who shall fill such vacancies.

When a majority of the viewing committee are present they shall constitute a quorum, and be authorized to award premiums; and the first on the list of those present shall be chairman.

No exhibitor will be allowed to act as a committee in which he exhibits.

All committees are *strictly forbidden* expressing an opinion upon the comparative merits of any exhibit upon which examination will be required to any exhibitor or other person than the superintendent, and then only in connection with their determination of awards, as a matter of information or explanation of the causes for their action, and in all such cases it must be made in writing and filed with their report to the Superintendent.

In no instance will committees be allowed to make known to any person or persons, other than the proper officer, their decisions prior to the attaching of the token of award.

Awards. All fruits must be grown by the exhibitor, and correctly labeled, five of each variety, accompanied by a list of the same for each entry. No part of a collection can compete for more than one premium, and must be arranged together. No individual exhibit will be allowed to make a part of "display of fruit by any county or local society."

When articles are not deemed worthy of a premium, the committee will, in all cases, withhold it, and are requested to report the cause.

Estimates of Values. Awarding committees, in making their estimates of the comparative value of collections of varieties of fruits, are instructed to base such estimates strictly upon the following points:

First. The nomenclature of collections, which should be in accord with the fruit lists of the American Pomological Society, and Downing's "Fruits and Fruit Trees of America."

Second. The value of the varieties for the purpose set forth in the Premium List.

Third. The color, size and evenness of the specimens.

Fourth. Their freedom from insect marks and other blemishes.

Fifth. The adaptation of varieties to the conditions of soil and climate in tree and fruit.

Sixth. Committees are instructed to exclude any and all unlabeled, incorrectly named specimens, and all duplicate plates, from their considerations in determining comparative merit.

Seventh. That the occurrence in a collection or exhibit of very large and showy but comparatively worthless varieties, will be considered as a discredit to such collection or exhibit.

In all cases in which duplicate plates of any variety shall appear in a collection, it shall be the duty of the committee to select the best plate of such variety in the collection, and to strictly exclude from the competition any and all other specimens of such variety.

Orchid Growing for Amateurs.

(*Continued from last month.*)

Resting Orchids. After the young growth has become matured some Orchids require to be kept drier, and only as much water given as will prevent them from shriveling. Others, again, need to be kept moist all the year around, such as Odontoglossum Alexandræ, O. vexillarium, etc., while Dendrobiums, Cattleyas, Lycastes, etc., require to be kept drier after they have completed their growth. When plants are making their growth it is often very convenient to keep them at the warmest end of the house; but it is advisable to place them at the cool end while resting. Avoid letting plants get too dry, or the pseudobulbs will shrivel up. That kind of resting does no good, but positive harm.

It may be pointed out that some plants in their habitats are so dried and shriveled up. On the other hand, the failure of Orchid growing in the past was this dry roasting treatment, which has been found by experience to be unnecessary—in fact, the plants will give better results under a more reasonable method of culture.

Watering Orchids. This is a process that can only be learned by experience. As to how often a certain plant will require water so much depends upon situation, weather and other circumstances that it is impossible to give a satisfactory answer. A safe guide through the season of activity is to keep the sphagnum on the top of the pot in a growing condition. During the hot and bright weather the plants may be watered overhead with benefit to them, which will also help to keep down insect pests; but directly dull or damp weather sets in, lay the syringe aside.

Ventilation and Shading. Air should be admitted on all favorable occasions; indeed, unless it is freezing or foggy weather it should have free access to the plants at all times, both day and night, as its circulation among them greatly helps to keep them in a healthy condition. It is also advisable that it should pass over the hot water pipes, in order that it may be partially warmed before reaching the plants, and to attain this end it should be admitted under the stage in cold weather.

During the summer months it will be necessary to use some kind of shading, whether of a permanent nature, or that which can be rolled up in dull weather—preferably the latter, as it is of great importance that the plants should receive as much light as possible without having the direct rays of the sun. Of course, there are exceptions to all rules, and it is well known that some Orchids are benefited by exposure to the full sunshine.

There have also been good results from suspending the plants in baskets or pots from the branches of trees during the summer, keeping them entirely outdoors for four or five months.

Manure. Should this be applied, and if so, in what way? There has, undoubtedly, been good results shown by damping down the house once or twice a week with cow-manure water, as the roots of Orchids are so formed that they are well adapted to absorb food from the atmosphere. This is a safe way to apply manure to all epiphytal Orchids, and so used, I believe good results will follow.

Then, on the other hand, strong rooting kinds, such as Cypripedium insigne and Lycaste Skinneri, may be greatly improved—that is, their flowers may be considerably enlarged—by the use of manure added to the potting soil. I have now a variety of Cypripedium insigne coming into flower, and as near as I can tell at present, about three parts of the flower-stems will each produce two flowers. This has been produced by potting the plants in a mixture of sphagnum and bone meal. If we carefully examine a Cypripedium flower, we shall generally find a small embryo of another flower at its base which has not been developed, simply because the plant could not supply the necessary nourishment; and I think if that necessary nourishment were supplied, most of the Cypripediums would become twin-flowered. The same thing occurs with Lycaste Skinneri, but generally here we have increased size of the individual flowers. Other Orchids, no doubt, would be benefited by manures, but it would be a dangerous practice for an amateur to try. It is better to let well alone, and be content with the results obtained by clear water, or occasionally damping the floor with manure-water.

Temperature. By keeping the Orchid house during the winter months at a minimum temperature of 45° at night in severe weather, and rising to 50° in milder weather with a corresponding rise of 10° during the day, and an advance during the summer to 55° at night, and 70° or 75° by day, from small but successful beginnings—which are important—many large and valuable collections have been got together, and the list of Orchids I have given will be found very suitable to start with.

Insects and Diseases. Orchids are very impatient of being fumigated with Tobacco smoke, and great care has to be exercised in doing it for the destruction of Green-fly and Thrip. The safest and best means of getting rid of these pests, which are very often troublesome amongst Orchids, is to have the infested plants carefully sponged with water, to which a small quantity of Fir tree oil has been added.

The most troublesome disease the amateur has to contend against is that called spot, which consists of black spots on the leaves, the tips generally becoming quite black. This is caused by the plants being kept too damp, or being checked in some way. If it should occur, have the plant shaken out, and the roots well washed in clean water and repotted in fresh material.

Success and Failure with Small Fruits.

[*Extract from an address by E. W. Reid before the Belmont Co. Farmers' Institute.*]

It has been a wonder to many prominent horticulturists why Strawberries in this section of Belmont Co. are superior to those of other parts of the State. Many have asked, Why does your soil give more berries and of a finer flavor than in our part of the country? I can answer this question but in one way, and that is that practical experience and brain work with the highest cultivation and fertility of soil are at the bottom.

Thoroughness. If you allow weeds or grass to grow with your vines they rob them of the plant food which by rights belongs to the plant. If you think you are lowering the cost of production by only working them once a month you are mistaken; you also lower the profit. We should furnish the most favorable conditions of the soil and keep a strict account of every dollar and every hour we have charge of the vine. There is no use for us to plead innocence when we fail, and say we have done it to the best of our ability. In this age when so many practical books are issued on this branch of industry, you should try and be at the front. Have a mind of your own; think, for thoughts put in practice do wonders. I do not mean by this that you can make a success by reading either books or papers alone; these should go with practical ideas of your own.

It is the profit we are after. Our first thought should be the soil and the preparation of the same. It should be drained naturally or artificially, and should be in the finest condition. It is impossible for vines of any kind to do well if water stands on the soil. We should make the soil as fine as possible. I think the best way to do this is by fall plowing, and then to stir it in spring with cultivator or shovel plow. This cannot so well be done in soil inclined to wash with winter rains. It is utterly impossible for plant food that is concealed in rough soil and lumps to do the plant any good whatever.

Fertility. As to fertility the time has passed for relying on the natural fertility of the soil alone. If you want the cream we must furnish the feed, for it is the large crop that makes the profit. This can be done with stable manure, and there is nothing better. It is better for being well decomposed. I never use any cow droppings, however. I find that this breeds the white grub, the egg being deposited by the May beetle. This last year I tried five loads again and it caused me more trouble than all the rest put together. Prof. Hoard, of Wisconsin, acknowledged the same fact to me.

Berries relieve the soil of very little fertility, and leave it in excellent condition for other crops. The first year is very hard on the soil, as it lays bear to the burning rays of the sun and the constant stirring relieves it of a good deal of its fertility, but it is put back by the plant the next. The plant contains a large amount of rich material, and this is why it requires so much

plant food. In a soil deep and rich the plants are better able to go through an extended drought as we have had this last season; a very essential point when fruit is ripening, as much moisture is then needed. Years ago I commenced to cover my young bed with manure instead of straw. But the proof has come; they use manure in a pinch; the pinch is when they can get it. It has enlarged my yield greatly and given brighter and larger berries. This is not only to be done with Strawberries, but Raspberries and Blackberries. Some practical growers think it better to use straw the first year and manure the second. I use it as a mulch the first year and plow it in for plant food the second.

The roots need air almost as much as they do moisture, and are deprived of it if a crust forms on the surface, and for this frequent stirring is the remedy. This also keeps down all weeds, but you should not work too late in the fall. I do not use the horse-hoe after Sept. 15. If any weeds or grass appear after that time, I go through with sharp hoes.

Planting. This should be done as early in the spring as the season will permit; about April 1st in this locality. We want a good plant taken from a young bed, with good strong roots, and if set early it will receive almost no check whatever. My method is to use a spade and line. I stretch two lines across the field, or as long as the rows are wanted, then two men and a boy can plant one acre per day with the ground being in good condition. The spade is pushed in alongside of the line, which makes a straight row and the same width. The boy carries the plant in a basket, and drops as the planters want them, so as not to expose them to the wind or sun, which is very injurious to them.

The plant is held in one hand and allowed to go the right depth into the opening with its roots spread out and hanging straight down, and then press the dirt firmly about it with the foot. The plant should be so firmly set that a leaf will pull off without disturbing the plant. It is a big loss when you have a poor plant and get a poor stand, for it takes the same cultivation, covering and time as if you had a good stand. It is a point worthy of the greatest possible care; failure here and the plants are of a feeble nature the whole season. To set the plant too deep and with the crown covered is very injurious. Not deep enough is as bad. While to plant with the roots all in a bunch close to the surface they will dry out in a short time. A most critical time with any plant's life is when it is out of ground. The subject of mulching is one of great merit, for it adds to the yield by keeping the ground moist, and it helps keep down weeds and grass and gives a nice clean fruit.

(To be Concluded.)

Storage Houses for Fruit.

[*E. H. Pratt, before the Chautauqua County Horticultural Society.*]

The cellar of David Wright, on Keuka Lake is about eight feet deep, mostly underground, entirely so on three sides; soil, dry gravel; walls, concrete, with ventilating pipes four inches in diameter built into them; pipes opening about eighteen inches above bottom of cellar and extending up through the building above, and opening about two feet above the roof. Cement bottom, no windows. Floor of packing house above double, with small trap-door, opened for admission of air when desirable. Outside door of packing house made with movable lower panels, openings covered with iron wire screening.

Air is admitted to the cellar by removing the panels at night or in the early morning, and opening the trap-door in the floor. The cool air falls through this opening into the cellar below and forces the warm air through the ventilators opening above the roof. Grapes are stored in the cellar in crates as brought from the vineyard.

This cellar has proved fairly successful, and kept Grapes in fine condition until March or April. I believe, however, he is satisfied he has not sufficient circulation, and that his ventilators are too small. They also open too high up from the bottom of the cellar, leaving too much dead air. Several cellars similar to this along the lake all keep fruit very well.

Mr. Levi Millspaugh of Branchport built a cellar and packing house last summer, which he thus describes: It is keeping my crop first rate. At the Western New York Horticultural Society, January 25th, I showed both Empire State and Catawbas as fresh as though picked yesterday.

My cellar is 24 by 32 feet, on south bank of gully north of my house. Eight feet deep in the clear; concrete walls, a six inch tile ventilation in each end, eight inches from ground, double floor overhead, matched ceiling on under side of joists. Double doors and double thickness of boards; screen ventilators in bottom of outside doors; elevator to raise Grapes into packing room. A ventilator pipe twelve inches square to reach through lower floor into the cupola; a slide or valve in the pipe to shut off air if wished. A wire screen slide upon which to set a small Florence oil stove to compel a draft in tight, muggy weather. Narrow windows, double glass, on hinges with cords and pulleys.

A small ditch or trough was made in the cement, all around the cellar a few inches from wall. An iron pipe to conduct water from above, with faucet to fill trough in the morning when

MIKADO TOMATO—REDUCED.

water is cool, and a discharge pipe at the other end to let off water the next morning and refill. The water works to keep cellar cool and give off moisture in hot weather, and by being always fresh to prevent mold.

About five-eighths of the cellar wall above ground. Temperature for last ten weeks from 34 to 38°. My Empires, Centennials and Catawbas are as fresh as when picked. I have a couple of tons of Catawbas I expect to keep into May.

In both these cellars the principle is the same, viz.: low, even temperature, with an abundant circulation of fresh air. There seems to be no distinct system of cold storage observed among the Grape growers about Keuka Lake.

Cold storage by the use of ice has been proved a failure, I believe, very generally wherever it has been tried. Fruit so kept spoils very quickly on being removed to a warmer temperature, and cannot therefore be shipped to market.

In a recent letter from the editor of the Vineyardist, he says: "We observe here a system of low, even temperature, about 37° being the best, and good ventilation. Any plan that combines these two things is undoubtedly a good one. Some of our growers use barns, others sheds, others cellars, etc.; but all who keep Grapes successfully through winter observe the rule, low, even temperature, with good ventilation. For myself, I think the best single principle to be observed in preserving Grapes is to pass air to your fruit house through a conduit five or more feet under ground for a distance of three hundred feet or more." The idea here seems to be to bring the air to a proper temperature by passage underground before it enters the fruit room.

With the best of appliances, however, very much depends on the condition of the fruit when picked, and care in handling. Only thoroughly ripe, sound Grapes should be put into the house, and too much care cannot be used in picking and handling, not to break or bruise the berry.

In closing, I venture to suggest that this subject is one which demands the closest and most earnest study of every Grape grower, for its successful solution solves in the affirmative the problem, Will Grape growing in the future continue to be a profitable industry?

Tomato Culture.

[*John S. Crosby before the Market Gardeners' Association of Boston.—Discussion.*]

He had tried various times for planting Tomato seed, from January to June, but the best time was about March 20 for early plants, or a few weeks later for the late crop. If seed is started too early the plants have to be held back so long before they can be set out that they become stunted and are more subject to blight.

A good fresh hot-bed is needed to start the seed so that it will come up in five days, and in two weeks the plants will be ready to prick out, 200 to a sash, in a bed also freshly made, with a good heat, so as to keep the plants growing. After a while they will need a second transplanting, setting them seven or eight inches apart in a mild heat, for which an old Lettuce or Radish bed is very good, raising the frame so as to have the glass a foot above the bed. The plants need abundant airing in fine weather, and the glass is taken quite off in fine days for two weeks before planting, which is done from May 15 to June 1. The plants should be bushy and not over ten or twelve inches high. Wet the bed thoroughly a day or two before setting, so as to make the loam stick to the roots in setting them out.

In a moist year Tomatoes will thrive on very poor land, but they will be a much better and surer crop if grown on good loam. A side hill with blue gravel subsoil suits them. Land that was heavily manured the previous year is better than freshly manured land. They should be set seven or eight feet apart by three or four feet, the wide spaces giving room for picking. Run the cultivator and hoe often till the vines run.

A few scattering Tomatoes are found on the tops of the vines, but the portion of the crop that usually brings the most money is the first and second settings of fruit upon the branches. Later the crop is often heavy, but prices very low.

Rough and gnarly fruit shows want of thrift in the vine, or rough land and coarse manure. The profit of the crop comes from the early pickings, and success depends quite as much on skill in handling the plants as on the seed, though some varieties are much earlier than others. Success often seems to be rather the result of luck than of skill.

President Rawson offered a paper for signatures binding the signers to refuse to sell Tomatoes below a certain price. The paper was the subject of considerable discussion, and was finally referred to a committee to be reported upon at the next meeting.

Mr. Varnum Frost thought the date of sowing seed was correct. He liked a stout and thrifty plant. He used superphosphate of lime around the plants at the first hoeing.

A sheltered place will bring them early. The Boston Market was a good early variety, but the improved kind, used by the Budlongs, is better. He liked the Paragon for a late crop.

Mr. Low, of Essex, said he did not like long plants, but when obliged to use them he laid them down and covered half the length or more. Dry gravel will produce blight and rot; he preferred a good loam. The early varieties are all rather flat and shapeless; he liked the variety called Scoville's Hybrid.

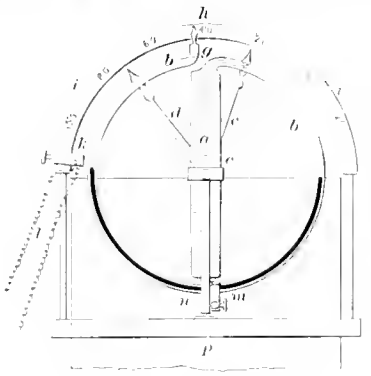
Beautifying Home Grounds.

[*Gustavus Schoenfeld before the Chautauqua Co. Horticultural Society.*]

No society, while professing to work for the advancement of horticulture should exclude the ornamental for that which is termed the practical. What a mission for this society, to help by plain directions and hints for the cultivation of everything grown in the fruit, vegetable and flower gardens,

for the planting and laying out of lawns and dooryards.

And what a grand picture a home will make with a well cut lawn, a few fine trees, neatly kept walks, shrubs and flower beds. Think of a country with such homes, peeping from their groves on rippling streams, not encumbered with selfish fences, with school-house towers and gleaming church spires among them, nice roads



A Rotary Thermometer.

on either side with farm fields, vineyards, pastures, orchards, woodlands and bounding hills. These together would form a public park, which all of us might ride and walk in and enjoy. Is such a picture only possible in the mind of a visionary enthusiast? Let us encourage Village Improvement Societies, Arbor Day, etc., and in a short time that which the most sanguine of us did not expect will have been accomplished.

Grass, trees, and flowers cost but very little and give daily returns in food for our eyes, seven months in the year, added with a few evergreens here and there all the year around. If we will carefully make our selection, buy only good plants of standard sorts from reputable firms near home, leave unheard of and high priced novelties and tree agents alone, we will find out that a dooryard can be made very attractive at all seasons and for many years for a small sum.

Deciduous shrubs are one class that should be much employed. They transplant readily and grow rapidly in effectiveness. They should always be planted in a fringing, irregular border, some three or four feet apart, on the boundary line, so that the green sward may have an opportunity to display its fullest charms.

Dotted among the shrubs may be planted clumps of Lilies and herbaceous plants. Near the house or at the intersection of the walks, a well planted and well kept Coleus and Geranium bed and your dooryard is complete.

Among shrubs the Spiræa Thunbergii, with its white flowers and the rich, red blossoms of the Japan Quince, will appear on the first indication of the presence of spring; the Golden Bell is also very early and attractive. A little later Deutzia gracilis, double flowering Almond, Tartarian Honeysuckle, Lilacs and Wistarias will delight us.

Then in June there are so many hardy, thrifty shrubs that we must beware of using too many flowering at that season, lest we find ourselves lacking for room for late blooming varieties. I will name the double flowering Deutzia crenata, the Mock Orange, White Fringe, Weigelias and Viburnum as good ones, not forgetting to find a place on the veranda for a Clematis Jackmanii and a Climbing Rose.

During July Spiræas Billardi and callosa, will bloom. In August and September we have the Altheas in varieties in bloom, Hydrangea paniculata grandiflora with its grand trusses changing continually from white and pink, to purple and deepest crimson, will bloom till the snow comes, nor should we neglect the white Clethra, the yellow Hypericum and the Burning Bush. Of course there are still some others equally good.

FROM VARIOUS SOURCES.

Cabbage Culture. Our method is as simple as it is reliable. When sowing seeds of early vegetables for home use, we also drill in our early Cabbage seed, and a few weeks or even months afterwards that of later kinds. The plants are thinned to stand the proper distance apart; and as we always leave the very thriftiest and most promising plants in the rows, every one will form a solid head if the conditions are otherwise halfway favorable. The thinnings may be planted elsewhere, if so desired. The Drumhead Savoy seed has done exceptionally well this season, every plant, whether in the original seed row or transplanted, forming a head; but the largest and best specimens were those grown where the seed was sown and had not suffered the check of transplanting. The same superiority of untransplanted Cabbages was also noticed in every other instance.—Orchard and Garden.

Burning Strawberry Beds in the Spring. The most thrifty bed I saw was where a spark from a passing train fired the mulch and burned it off in March—there was not a sign of rust, not a leaf perforated by insects, and the plants stood nearly a foot high, with dark glossy foliage and every sign of vigor. The eye could easily trace to a foot where the fire ran. Many growers practice and recommend burning over the beds at the close of the picking season, and as there are so many insect enemies to contend with, and probably fungi, there is little doubt but it is an excellent plan. I believe, however, that March burning would be better, and the only objection to it is that the berries are left without mulch or must be mulched again, but mulch can easily be supplied to a family bed. The advantage of spring burning is that it disposes of the enemies of the crop before they have any chance to do any damage. I recommend that each grower try burning a spot next spring and carefully note the result.—W. J. B., in N. Y. Tribune.

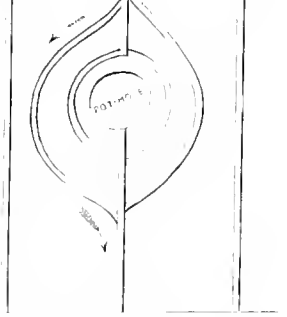
A Rotary Thermometer. This ingenious instrument is described in La Nature. It is quite sensitive to small changes of temperature, and, if desired, registers the highest and lowest points reached in a given time, or draws automatically a curve on a sheet of paper, showing all the variations. It will also sound an electric bell when any desired temperature is attained. The details of its very simple mechanism are shown in the engraving. The main reservoir or bulb, *a*, balanced on a pivot, *c*, is filled with alcohol; while the curved tube, *bb*, into which it is drawn out, contains mercury. As the temperature rises, the alcohol expands, forcing the mercury along in the tube, and so (the mercury being heavier) changing the center of gravity as to cause the whole to revolve on the central pivot, *c*, to which it is attached. The metallic index, *h*, which is placed at the end of the tube, thus indicates on the scale, *ii*, every variation of temperature. Two extra pointers, *d* and *e*, are pushed in either direction by the index, *h*, of the revolving tube, and indicate the highest and lowest points reached in any given time. At *k* there may be an electric connection (wires shown at *l*), which can be moved along the scale and attached to any degree mark desired. This is then acted upon by the metallic pointer, *h*, causing a bell to ring at any temperature to which it may be set. At *m* a piece of metal, carrying a pencil, *n*, is attached to the tube, and if a sheet of paper, moved by clockwork, is made to pass before it, a tracing will be made which will show all the variations of temperature during any given time. The simplicity and cheapness of this instrument are also among its most important advantages.

Dwarf Pears. What advantage is there in planting Dwarf Pears instead of standards, and which do we advise? In answer, dwarfs begin to bear soonest, and are more within reach for gathering the fruit, can be more easily sprayed with poison to kill insects, occupy less space allowing more trees to the acre, and the fruit is less liable to be blown off from the low heads. The early bearing is commonly regarded as the leading advantage, but a few standards like the Bartlett, will bear early if a proper selection is made. The drawbacks are, shorter lives, as we have seen standards 200 years old, but dwarfs rarely over 30 or 40 years. Dwarfs require careful selection, as there are but few sorts which succeed well propagated in this way, among which Angouleme is best, and nearly as good are Louise Bonne of Jersey, Diel, Bonssock, and a few others. In some localities dwarfs have entirely failed; they should not therefore be planted to any extent, until a trial has been made, in any region. They require good cultivation and enriching, and enough pruning to give vigorous shoots at least half a foot long. In some places they prove very profitable.—Country Gentleman.

Protecting Vineyards from Spring Frosts. In the spring of 1887 many vineyards in Northern California were seriously injured by late frosts, and the Rural Californian published a remedy for such a calamity in the future, which has been tried for several seasons on a vineyard of 100 acres with great success. The system briefly is to prune, leaving as many long canes as there are spurs desired, instead of cutting to form the spurs. The long canes reach out and overhang the vine, protecting it until all danger of frost is past. The lower buds will not swell if the canes are left, for the growth will be from the ends of the canes. When the danger of frost is past, the canes that were left at the pruning are cut away and then the growth in that direction being checked, the lower spur buds will swell and sprout. We would like to see this plan tried in this section of the country on vineyards that have heretofore been subject to more or less injury from late spring frosts, and results reported later.—Vineyardist.

Easy Asparagus. Soil, sandy loam; manured very heavily, then ploughed, turning the manure under; ploughed 8 to 10 inches deep. Furrows 3 feet apart and about 6 inches deep, in no case more than 7 inches; plants either one or two years from the seed, were placed in bottom of these furrows about 15 to 18 inches apart, taking care to spread the roots in their natural positions; this is very easy to do. After the plants were so placed the earth was drawn back into the furrows and pressed down with the feet, and the bed was finished. Since that time it has been kept free of weeds and grass, and every spring the tops have been cut off and burned, a good coat of manure put on and dug under, using the common six-tined manure fork for the purpose, being careful not to disturb the roots of the plants. The result has been that since it came to its best, about three years after setting, it has never once failed to yield a magnificent crop. We cut some from it the second year, but not much. In cutting care should be taken to cut it clean as long as it is cut at all. As a market crop it is a profitable one until there is a surplus, and then I found it to be as near worthless as any crop we grow. To my own family and visiting friends, it is one of the most delicious dishes that come from the garden, and it is rare that a large dish of it does not find its way to our table at least once each day from its first appearance in early spring until the season is nearly over, or until our second sowing of Peas are at their best. One thing more. The reason for leaving the tops on the beds without cutting until spring is, when the snow falls the tops catch and hold it. It remains there until it melts and is the best mulch for the beds that we can have. It always leaves the ground in the best of order for early working, and the plants can be started some days earlier in this way than by any other open ground method that I have ever tried.—J. M. Smith, in Farmers' Review.

Draining Around the "Pot Holes." I have had some experience in draining land, and can get around "pot holes" (sharp depressions in the midst of areas more or less even) without the use of an engine and pump. I never go through these but go around them with the tile so that no water gets into the pond, only that which comes from the clouds. I send diagram. To persons that have no knowledge of using tiles I would say for this use large tiles. I never use 3-inch



Managing Pot Holes in Underdraining.

nothing smaller than 4-inch. An 8-inch tile with proper fall and well put in will carry all the water that falls on 40 acres. You can put in as many branches as you please and the 8-inch will carry off the water. I never made any money until I drained my land.—Corr. Ohio Farmer.

Care of Window Plants. We have noticed that a lady friend of ours always has a charming lot of window plants, and is more than usually successful in getting her plants to flower well. Her Callas are sure to be boldly in flower early in the new year; her Hyacinths and other Dutch bulbs almost as soon as the greenhouseman's

across the way. If we ask her what secret she possesses, she says she has none; put if she has no secret as she calls it, she studies the habits of her plants. For example, they occupy a sunny window, and the curtain is, when drawn, back of the plants. The smaller ones are on brackets and shelves nearest the glass. The sides of the bays contain the larger plants, even out into the room, but only those that can stand partial light—such as India-rubber tree, Euonymous, a Palm and the like. Her theory is to water only when the soil shows signs of dryness, and then thoroughly, so the whole soil is soaked. Another thing, the water is given hot as one's hands can bear. This, she says, has a great tendency to push the flowers out when they are apt to lag. As syringing is out of the question without destroying paint or furniture, the leaves of all which have smooth surfaces are sponged. This is a very important feature, and pays well. Every two weeks remove those which cannot be sponged to the bath-tub, and there treat them to a shower bath. Dust stops the pores of the plants. We are satisfied that her success is due to these minutiæ. Another lady friend has unbounded success with single specimen Begonias. These being the only plants grown, are moved from window to window as the sun goes from one to the other. At night they often occupy a conspicuous position in the room. We suspect the secret here is that the plants grown being few in number, they have abundant breathing room, and can readily obtain all the light and air they can possibly make use of, just as an isolated forest tree grows and assumes the most faultless shape, with branches sweeping the ground. If this particular tree had to share its light and moisture with a lot of struggling brethren, it would have a naked stem and contorted branches.—Prairie Farmer.

Vegetable Products on the Table.

Boiled Sweet Potatoes. Choose Potatoes of uniform size, wash and boil twenty minutes; drain and lay in the oven, turning them several times to prevent burning, until they yield readily to the touch; serve without paring.—Cultivator.

Rice and Apples. Core as many nice Apples as will fill the dish; boil them in light molasses; prepare a quarter of a pound of rice and milk, with sugar and salt; put some of the rice into the dish, then put in the Apples, and fill up the intervals with rice, and bake to a fine color.

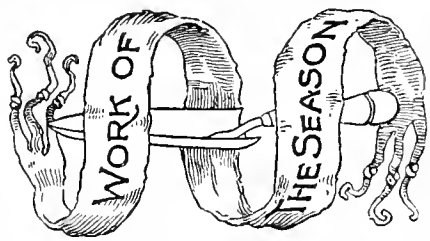
Potato Omelette. Grate three mealy boiled Potatoes, beat three eggs, and mix these with three tablespoonfuls of milk. Add salt, pepper, and any herb to flavor. Mince three ounces of ham or bacon in small dice, fry these in the pan; add a piece of butter, put in the mixed Potatoes and eggs, stir all until set; then leave it to brown. Fold over and serve.

Tomatoes and Rice. While sufficient Rice is being boiled, put into a little saucepan three ounces of butter, which should be allowed to brown slowly; and when that is accomplished—as if it has the merest tinge of "burn" it is spoiled—put into it a large breakfast-cupful of Tomato juice, which should be left to simmer for about a quarter of an hour. When the rice is nicely piled on the dish, pour the contents of the saucepan over it, and then put it into the oven for a few minutes, because it requires to be served very hot.

Cooking Onions. Those who like Onions should give them a trial cooked in this way: Mince a pint of peeled Onions and put them over the fire with water enough to cover; simmer five minutes and pour off the water. This will take away the rank taste that they sometimes have in winter. Now add a cup of boiling water, a tablespoonful of butter and a little salt; cook slowly for twenty minutes; add a cup of milk, a teaspoonful of butter rubbed with the same quantity of flour and a little minced Parsley. Simmer for five minutes and serve at once. Nice with roast beef or steak.—Poultry Monthly.

Uncovered Apple Pie. For a change from the common covered pie, the following is nice. Make a rich crust and cover a deep pie plate or shallow pudding dish. Sprinkle it thickly with flour and pour in two or three large spoonfuls of molasses. Pare juicy sour Apples, halve them and remove the cores. Place these halves in the dish as close together as possible. Sprinkle the top with sugar, a little nutmeg and small pieces of butter. Bake slowly until the Apples are done. Serve hot with sweet cream, and you will have a pie that rarely fails to please. Another way is to use a top crust and molasses for the sweetening. This too needs to be eaten with cream to be at its best.—Country Gentleman.

Pineapple Fritters. Make a batter with half a pint of milk, two eggs, and sufficient flour to make it the consistency of thick cream. Have ready a can of Pineapple—those containing a whole one are much the best. Cut off as many thin slices as you require, and place them into the batter. Drop them, with enough of the batter to quite cover them, into a frying-pan of boiling lard. When it is nicely crisp and brown, take them up and place on some paper on a dish in the oven. When drained pile on a very hot dish, and sift a little crushed sugar over the fritters. A little practice will enable you to fry three or four fritters at the same time. Do not stint the lard for frying; it should quite cover the fritters, and any left in the pan be set by for future use.



HOUSE PLANTS.

Bulbous Plants, such as Hyacinths, Tulips, Lily of the Valley, and of the smaller growing Daffodils, if brought in from the cold frames early in the month will, throughout the North, grow with great vigor in the window and be some time ahead of outdoor blooms.

Callas. The best treatment after bloom is to withhold water somewhat, and then after the weather comes off fairly warm remove them from the pots and plant in a rich bed of soil. Lift in August, remove the small bulblets and repot the old ones. They will drop their old leaves by this course, a matter of no concern.

Camellias now, more than at any other season, need frequent syringing and sponging off of the leaves.

Chrysanthemums. Care must be taken that they do not get pot-bound; their growth must be constant. For late plants cuttings may still be struck.

Climbers. Such as cover the walls of buildings should in general receive their annual pruning before the buds start. Roses to have the side shoots trimmed back to one or two buds. Those Clematis that flower early in the season should be pruned as suggested for Roses, but the summer and autumn blooming class (including Jackmani) now so popular, should be pruned back to within a short distance of the surface of the soil, as this will induce strong side shoots from the base, and an abundance of flowers in season.

Flowers should now be abundant in the windows. If bedding plants are to be bought from the florists, it is well to select some of these now. Keep them in the window for their bloom here until planting-out time.

Fuchsias in bloom, aside from needing much water, are benefited by an occasional dose of weak liquid manure. On shifting, see Heliotrope.

Heliotrope. The beauty of this plant depends on never allowing the roots to become pot-bound; before this occurs shift. Large shifts suit these plants and some others, like Cinerarias, and so on, admirably.

Mignonette should be sown where the plants are wanted, whether in pots or in the garden, as few kinds of flowers transplant so badly.

Oleanders of small size do better for being bedded out for the summer, taking them from the pots.

Petunias. If old plants have grown unshapely, a thorough cutting in now will improve them much in the course of six weeks or two months.

Propagation may now be going on with many kinds of plants for stock to bloom next winter.

Window Boxes. The most satisfactory boxes for summer use are such as are stocked in May with plants of considerable size that have been earlier brought along in good shape by due repotting. This is a hint for now shifting up a lot of plants for that purpose.

LAWN AND FLOWER GARDEN.

Annuals. Half hardy and tender sorts may be started under glass, or in a sunny spot that is sheltered from the wind by buildings, and which may be sheltered by mats or shutters in cool or frosty nights. Hardy kinds may be sown in the open air. See Seed Sowing.

Bedding Plants of all kinds are much better off to be brought on in hot-beds for the last six weeks before planting. Then in warm days the glass may be wholly removed, and this will tend directly to the making of strong, robust plants.

Cold frame plants, such as Carnations, Violets, Roses, etc., should now be hardened off by much exposure.

Evergreens may be planted some weeks later than is well for deciduous trees. They should be pruned at transplanting, the same as any other kinds.

Hardy Bulbs. Beds of these should in all cases be lightly raked over before the plants appear.

Hedges may now receive their annual pruning.

In staking trees bind them fast by means of a strip of duck or leather, rather than with a cord. A piece of such material brought around the tree and crossed on top of the stake, driving one or two nails through into the stake, is all that is needed.

Lawn. Mow whenever the grass gets to be near two inches high. Mow carefully, that no uncut strips will ever be seen, and attend to having the gauge wheels elevated alike on both sides.

Lilies, if to be planted, should have this done early. Fall is a better time, excepting for the old Candidum, which should be transplanted in August.

Lobelia—the blue kind—as a bedding plant affords a rare color, but it does not remain handsome very long. It should be managed by getting up successive propagations, replacing the plants in the beds about every two months. Propagate by division, slips or from seed.

Roses. Plant hardy ones as early as they can be procured, and the soil is fit to receive them.

Seed Sowing. This month is the time for the early sowings of Annuals and other seeds over a large range of our country. We prefer sowing most things in drills, to sowing broadcast. Drills about an inch deep should be opened in which the seed should be scattered quite thickly. A covering of fine earth should follow; it is a good plan to use some light mold that has been sifted for this purpose. Pat down the covering afterwards with the hoe or the back of a spade.

Street trees should not be planted unless protected against the gnawing of horses by some kind of guard. Those made of slats or, better yet, woven wire fencing material wound around the trunks, are better than board guards, for injurious insects find a safe retreat behind the latter.

Tender Bulbs. Such as Cannas, Caladiums, Dahlias, etc., ought to be starting and getting into shape for planting. Gladiolus should be planted at intervals of three weeks until June 1st. Some authorities recommend doing early planting for Tuberoses, saying that they flower better if started while the soil is cool.

Weeds have no place in a well-kept garden. Some kinds, like the Shepherd's Purse, Chickweed, and so on, start up, flower and seed very early; they should be speedily destroyed as soon as seen. Dandelions, Plantains, etc., make themselves at home in lawns if allowed, giving them an inferior look. Remedy: Cut with a short, strong-bladed knife, just below the crown.

PLANT CULTURE UNDER GLASS.

Alternantheras. By dividing up the stock on hand in pieces so small that each one has a bit of root, potting separately and setting in a close frame rarely admitting air (they love high heat), each one will make a fine plant for bedding out in six or eight weeks.

Annuals sown early must not get crowded; transplant or thin out; straggling ones should be topped.

Azaleas. Steadily increase the ventilation of the apartment occupied by these. The plants should now have been cut back, and free airing is essential to healthy wood and a stocky growth.

Carnations, if given a top dressing now, will repay the trouble by a great increase of bloom later.

Climbers for summer, like German Ivy, Maurandya, etc., will be the better for cutting back now.

Crowding at this season is a common foe to the well-doing of plants. Make hot-beds or frames to accommodate the overplus until planting out time.

Cuttings lately put in sand should be frequently examined, and immediately that roots, however small, are present, they should go into pots.

Fall Plants. Propagate for fall use, Alyssum, Heliotrope and any other plants thus needed.

Ferns. Shift or renew the soil of those in pots; in doing so break up the old outside roots somewhat.

Fuchsias. The plants require warmth, moisture and shade—the latter must not be too dense. Six weeks must elapse between the last stopping and the time they are wanted to be in flower.

Ivy Geraniums if cut back at once will get into fine shape for summer use by June 1st.

Orchids. At this season keep up the moisture by sprinkling the paths and shutting up early. Any plants requiring repotting must be attended to as soon as in a growing state. Shade from the sun.

Roses are liable to be troubled with fly now: fumigation is the simple and safe remedy.

Shade lightly with whitewash, or with naphtha and whitelead, over Camellias, Azaleas, Fuchsias, Double Primroses, Caladiums, Callas, Fancy Coleus and Geraniums, Ferns and other plants liable to spot. Sometimes a blister in the glass will cause a streak or spot. Spy it out and paint on the under side.

Shift all subjects as they require more root room, for if active plants have their roots confined to insufficient or poor soil, their vigor and beauty will be much impaired. Use clean pots always; the reason why plants do better in new pots is because the pores are unclogged, hence air has ready access to the roots, and this is wanted. Thoroughly washed old pots answer nearly as well as new ones.

Stove Plants. Rapid growers, among these such as Gesnerias, Gloxinias and the like, should now most likely be shifted. If given bottom heat directly afterwards it will be a great help.

Verbenas propagated the fore part of April will be early enough for making good bedding plants.

FRUIT GARDEN AND ORCHARD.

Berries. Plant Raspberries in rows 5 feet apart and 3 feet in the row. Blackberries in rows, 8 feet apart, and 3 feet in the row. Strawberries may be set in rows 3 feet apart, and 12 inches in the row. The soil should be fertile, but good cultivation counts much.

Currants would give better satisfaction if not so generally slighted. They repay very liberally for pruning, manuring and culture.

Grapes. In planting young vines prune to two eyes.

Manures. Wood ashes, where available, are the cheapest fertilizer for fruit trees. In their absence, bone manure three parts, and muriate of potash (German salts) of high grade, one part, have the strong endorsement of the Massachusetts Agricultural College.

Old Orchards should be manured and plowed, using lime and ashes.

Quinces. In planting these trees they should be given a rich, mellow soil. Old trees may be materially benefited if the branches are carefully thinned out and a good dressing of well decayed manure is given over the surface of the roots.

Strawberries covered last fall should have the cover drawn apart where the plants are. Beds not mulched in the fall should be provided with a dressing of littery manure or straw to keep the weeds down and the fruit clean later.

Supports should be provided for Raspberries and Blackberries wherever neatness is aimed at. These can be readily supplied by placing locust posts through the center of the row about twenty-five feet apart. Such posts to be about five feet high and to have two strands of wire attached, one at the top; the other three feet from the ground. To these the vines can be secured.

Trees, as soon as they arrive from the nursery, should be heeled in by the roots, until wanted one by one for planting. Should, however, any be received in a shriveled up condition, bury the whole tree in the ground for several days, until plumpness is restored. If they become frozen en route, do not unpack while in this condition, but place the package in a cool cellar, that they may thaw gradually.

THE VEGETABLE GARDEN.

Artichoke. Remove the covering as soon as the weather becomes settled, and fork in a dressing of good manure around the plants.

Asparagus. The time to cut is when the shoots are 6 to 8 inches long. Careless cutting spoils many stocks. Use a knife with a pointed blade and cut with the point, so as not to injure any ont of sight shoots.

Beets are better sown in well dug soil not overmanured. They then make small, nice, well-colored roots, such as are most desirable.

Cauliflower. A good crop can be looked for only on ground that is well enriched before planting.

Celery, for main crop, should be sown early in April, in a nicely prepared seed bed in the open ground.

Culture. Keep the soil between plants and drill rows frequently stirred to free them from weeds.

Fleas on Plants. Watch the Turnip and Cabbage plants for these pests, and as soon as they show themselves dust with Paris green or London purple mixed with flour or land plaster, one part of the former to fifty of the latter. This is the best remedy and one application usually suffices.

Hot-beds. Give plenty of air in the day time; keep close at night by using mats, also when frost or wind threatens. For watering at this season use water with the chill taken off.

Onions. Use manure freely, or a good crop need not be expected. When large enough to weed, a top-dressing of wood ashes will help the crop.

Parsley may be sowed thinly in drills and then if covered with tiles or stones for about ten days, the seed will begin to show itself, instead of taking as commonly several weeks for its germination.

Radishes. Sow two weeks apart for succession.

Seed Sowing. Do not trust seeds of doubtful vitality, but test them first. Count out two dozen seeds, sow in a flower pot or other vessel of soil, covering but lightly, and note what share comes up. Start in a well prepared seed bed such kinds as Brussels Sprouts, Broccoli, Cauliflower, Celery, Endive, Kale, Kohl Rabi, Lettuce and Parsley. When frosts are over plant Bush Beans, and start Lima Beans in sods in the hot-bed.

Sweet Herbs. Look ahead to a supply for next winter, by sowing now for later transplanting, Sage, Thyme and Sweet Marjoram. Summer Savory must grow where it is sown.

Sweet Potatoes. Start these toward the end of the month in the hot-beds for plants to be ready for planting out by the first of June.

Tomato plants that have been brought along in hot-beds or seed boxes, must be transplanted promptly to frames (using pots, boxes, or not, as you choose) before they become drawn in the least.

Tools. Put each one in working order before the day it is called into use.

Wet land ought to be well drained, as it is always late in the spring before such is ready to work.

FRUITS AND VEGETABLES UNDER GLASS.

Cucumbers in frames. Continue to use linings to keep them growing; if stable manure is scarce some other material like grass may be used now instead.

Figs. In pots swelling up their fruit to be given liquid manure twice a week. Stop strong growing shoots at the fifth leaf.

Grapery. Where the Grapes of early vines are changing color, air freely, leaving ventilators open a little at the top during the night. Keep the air rather dry to prevent shanking, but it is a mistake to maintain a parched atmosphere at this time; sprinkle the floor but withhold the syringe for the present. Where new varieties are started or old ones replanted, this is a good time for planting. Attend to former directions concerning graperies.

Lettuce. Some of the plants wintered over in cold frames may be transferred to hot-beds, where they will produce an earlier crop. Seed may be sown for succession. The White Forcing Head and Tennisball are excellent for forcing purposes.

Peaches that are being forced will now be swelling fast, and the last thinning must be done without delay. Water thoroughly at the roots and use manure water freely till the fruit shows color. Syringe twice each day. Heat and air are needed at the fruiting stage.

Pines that show fruit should be given manure water, warm and weak. Before shutting up syringe. Robust growth may be induced by free ventilation.

Strawberries in heat ought to be hardened gradually after fruiting, if the plants are required for new beds, before removing them outside.

POINTS ABOUT POULTRY.

Nut trees are appropriate for shade in the poultry run; fowls will not trouble the product.

Children and Poultry. Educate the younger members of the family to habits of economy by giving each a flock of fowls, says the Mirror and Farmer. But in so doing they should be instructed to keep strict accounts, and made to attend to all the details of management. Should the poultry or eggs be used in the family, the young people should be paid for such, and everything should be done in a business-like manner. In some families no spending money is allowed the children unless they earn it, which is done with a view to teach them the value of it, and by giving them a flock of fowls they will usually try to manage the flock to the best advantage.

Large Chicken Lice. Chicks that refuse to eat, throw their heads back, tumble over on their backs, and act as if bewitched generally, are probably troubled with the large chicken lice that at first are found only on the heads of the victims. Chicks that are adorned with topknots are very apt to be troubled with these pests. The quickest way to get rid of these lice is to take a big pin and catch them one by one- you will not often find more than two or three on a chick—and then rub on something to kill the nits. One of the best things for that is a mixture of carbolic acid and fresh lard—one-half ounce of the acid to a gill of lard. If the acid be not at hand, use whale oil, or failing in that, try salted lard, which can be found in every house.—Practical Farmer.

Houdans. These fowls are suitable for clean quarters, and the chickens are as salable as any, considering their size, for the flesh is white, and the feet are five-toed, resembling those of the Dorking. The top-knot of the Houdan is rather against the fowls being kept in dirty yards during the winter, for here in wet weather they often become covered with mud. Want of size is apparent in many strains of this breed. If these difficulties can be overcome, Houdans will answer, for they are good foragers, very fair layers, and the chickens are active and hardy from birth. The hens, however, do not sit, so incubators or birds of another variety must be provided for hatching purposes. Plymouth Rocks are good all-round fowls, but are not considered such good layers as the Houdans, although much always depends upon the strain.

Eggs for Hatching. If the rules given by an authority in France—where poultry matters receive so much successful attention—were strictly followed, we should hear less about addled eggs, chicks coming dead, or too weak to break out of the shell when fully developed. Pick out the eggs as soon after being laid as possible. This prevents the prolonged contact of the heat of a succession of laying hens, creating a premature development of the germ in the egg, making it liable to perish when this heat is withdrawn. Reject all in any way misshapen, or surrounded with a circular ring, or having one end with an uneven or rough surface. The sooner eggs are set, the more certainty of hatching, and the more quickly. Eggs, in order to be well kept for hatching purposes, ought to be turned once a day, thus keeping the yolk in the center, which is important. It being of greater specific gravity than the white or albumen, its tendency is to work through to the side of the shell, and this injures it for hatching, the chicks being liable to come out weakly and deformed. When eggs are received by express the package ought to be opened and set in a quiet, airy place for twenty-four hours before being put under the hen. This delay is required to allow the fertile germs to recover their natural position and equilibrium from the jolting they get in traveling.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

655. **Oleander Culture.** Does the soil for these plants have to be changed in the tubs annually or not?

656. **Cleaning Waste Pipes.** How can I clean such of grease and verdigris without digging them up?—E. G. R., *St. Louis, Mo.*

657. **Ailing Begonia.** My large Begonia metallica has always done well until this winter, now the leaves turn brown at the edges as soon as they open, and later drop. What is the trouble?—L. V. C., *Albany, Oregon.*

658. **Preserving Grape Juice.** Can you give a rule for preserving Grape juice for future use without fermentation, if a person had only a bushel or so of the fruit for working up?—J. B. W., *Chariton, Mass.*

659. **Gladiolus Query.** What is the difference between Gladiolus types, Gandavensis and Ramosus? Are they equally large and effective in bloom?—J. L. B.

660. **Sparrow Trap.** Mine made after the recent pattern did not catch 'em, they wouldn't go in. Perhaps the hole was too small. Will others report, stating dimensions of such as have been effective?—J. S. A.

661. **Cold Storage House.** *(a)* What would be the best size and style of house for holding 300 to 500 bushels of fruit, and suitable for retarding Peaches and Plums in summer and Apples in spring? *(b)* What would be the best material, wood or stone. Lumber, sawdust and charcoal are plentiful here. *(c)* Should the ice be overhead or at the end? *(d)* Does cold storage fruit that is picked a little under ripe ship all right without refrigerator cars?—R. G., *Oceana Co., Mich.*

662. **Grapes for Various Sections.** Would you give the names of the varieties best suited to various sections of the country, also some points concerning soil elevation, etc?—Z. F. W., *New Providence, Ind.*

663. **Crabs for Stocks.** Would it do to plant Hewes' crab seed for stocks to graft the common Apple on?

664. **Apples Falling Prematurely.** A Winter Pearmain 15 years old blossoms well every year, but the fruit all drops after blossoming and before it can ripen. What is the cause and cure?—O. B., *Hardin Co., Ky.*

665. **Leached Ashes for Strawberries.** Are they worth drawing two miles, and at 25 cents a load, for prairie loam? My past experience in their free use would say not. Would they be better for orchard or meadow?—G. J. K., *Janesville, Wis.*

666. **Violet Culture.** How should this plant be managed from first to last for winter flowers?

667. **Forcing Lily of the Valley.** How can this be done most profitably, and how should pips be procured?

668. **Forcing Asparagus.** I have an Asparagus bed the plants of which stand rather shallow. Would there be likely to be money in forcing the roots of such under the benches of a hot-house I contemplate building? When should the roots be taken in and how to be treated?—J. W. S., *Asbury, Md.*

669. **Plums, Free and Cling Stone.** Of the following which are free and which cling stone: Miner, Wild Goose, Lombard, Maquoketa, De Soto?—SUBSCRIBER.

670. **Peach Stones.** Where could five or ten bushels of these be procured for spring planting in New York State?—G. T. F., *Mound Dora, Florida.*

671. **Bagging Grapes.** What material is used for this? If paper bags, then what size?—Mrs. G. C.

672. **Varnish for Rustic Work.** Will you tell me the best article for this purpose and how made?—C. F. H.

673. **Downing Mulberry.** Is this tree hardy enough for our state?—W. P. M., *Jefferson Co., Pa.*

674. **Asparagus Tenuissimus.** My plant of this shows dead leaves, but the stems are green. How can it be restored?—C. W. W., *Strafford, N. H.*

675. **Bark Lice.** I enclose specimens of twigs badly infested with an insect. What is it and how to be treated?—F. M. S.

676. **Grapes for Profit.** Can a vineyard be made profitable without converting the Grapes not fit for table use into wine?—C. E. S., *Buffalo, N. Y.*

677. **Manure for Flowers.** Is there danger in a free use of manure for Geraniums, Carnations, etc.?—J. J. E.

678. **French Daisies from Seed.** Can these plants be grown from seed, and if so, where is it procurable?—E. S., *Wayne Co., N. Y.*

679. **Managing Pot Hydrangeas.** I would thank any reader for points on managing these, for I am not meeting with success?—C. L., *Winona Co., Mich.*

680. **Primulas after Bloom.** How should these plants be treated when the flowers are gone.—Mrs. S. C. L., *Worcester Co., Mass.*

681. **Root-grafting Various Trees.** Is this method successful for the propagation of Plums, Quinces, Peaches, Pears, Nut trees, etc.?—E. P. R., *Sidney, Ohio.*

682. **Laying out Steep Front Yard.** Could you give a plan for my front yard 70 x 85 feet, and which is so steep towards the street that a straight walk would wash out?—Mrs. R. T. K., *Lauderdale Co., Ala.*

683. **Marechal Niel Rose-bud Decaying.** The buds on my Marechal Neil in the greenhouse looked healthy for a time and then decayed. What is the trouble?—A. D., *Rochester, N. Y.*

684. **Acacia Culture.** Any information on treating these after blooming and also on raising them from seed would be appreciated by AMATEUR, *Columbus, O.*

685. **Sweet Potatoes at the North.** Can these be grown profitably at the North as a market crop, and how?—A. P. F., *Worcester, Mass.*

686. **Oleo Fragrans.** My plant of this bloomed very freely in the fall, and since has done nothing. It became covered with white scale; leaves turned brown in patches and dropped off. I cut it back a little, washed thoroughly, etc., but very few new leaves form. What is the matter?—J. G. M.

687. **August Giant Grape.** Has the August Giant Grape-vine been fruited to any extent, and with what success? What is its character? Also Lady Washington Grape vine?—A., *Cincinnati, O.*

REPLIES TO INQUIRIES.

579. **Palms for Room Culture.** Palms do not require any special preparation to fit them for room culture; they can be grown in any room that is kept safe from frost, but if possible give them a temperate of from 55 to 60 degrees. As usually grown they are generally starved and given no opportunity to develop their tropical foliage, so I would strictly insist on their being given a more liberal treatment and every opportunity to properly develop themselves. They should be repotted annually and given a compost composed of two thirds fibrous loam and one third well decayed manure. In potting always use porous or soft baked pots, and let them be proportionate to the size of the plants, and see to it that they are well drained; if the pots are one-third filled with drainage it is none too much. Repot during the month of May, very carefully removing one-third of the old soil and replace in pots a size or two larger. In the summer they require partial shade and plenty of water, both overhead and at the roots. It is best to plunge them in a bed of coal ashes or cinders in order to prevent the worms from entering the pots. Turn the pots occasionally. In winter the water supply should be more moderate, but when required water thoroughly, as they should never be permitted to become dust dry. At all seasons give liquid manure once a week, and this will cause them to acquire brightness of leafage, and frequently sponge off the leaves very carefully with soapy water, to remove dust dirt, etc., as well as to keep down all insect pests. They can be placed outside about the middle of May and brought inside about the middle of September, or as soon as the nights become cool and frost is expected. Palms rank among the most valuable of plants for the window garden, for if properly grown and cared for they will increase in size and value every year, and when they have become too large for the window garden they can be readily sold or exchanged for smaller specimens. The following are the most desirable varieties for the window garden. They are not expensive sorts, but can be procured at a cost of from seventy-five cents to one dollar and a half each, according to the variety and size of the plant. Areca lutescens, rubra and Verschaffeltii, Carludovica palmata, Caryota urens, Chamædora latifolia, Corypha Australis, Chamærops humilis and excelsa, Cycas revoluta, Jubea spectabilis, Kentia australis, Latania Bourbonica, Oreodoxa regia, Pandanus utilis, Phœnix dactylifera and reclinata, Ptychosperma Alexandriæ, Seaforthia elegans, Sabal Adansonii, Thrinax argentea and elegans, and Washingtonia filifera.—C. E. P.

584. **Unhealthy Geraniums.** If your plants are all of one variety, or have all been propagated from one plant, throw all away, and start with a fresh stock. Or you may be giving them unsuitable treatment. Geraniums require for their well doing, a light, sunny situation, a temperature of from 45° to 50°, and plenty of air. Don't over-pot them, as they will not bloom well until the pots are well filled with roots, then liquid manure at times will be of decided benefit.—C.E.P.

599. **Fertilizers for Strawberries.** A heavy dressing of wood ashes could be applied at once on the top of the mulch with decided benefit to the crop. Or remove the mulch and spread Blood and Bone Fertilizer between the plants and work it in as thoroughly as possible. Apply at the rate of one hundred pounds per acre. If this is the first crop and the ground was properly prepared there should be no occasion for applying manure at this time of the year.—C. E. P.

601. **Pears and Plums for Iowa.** Three early Pears, Manning's Elizabeth, Osband's Summer, and Bartlett. Three early Plums, Golden Gage, Jefferson, and Washington.—C. E. P.

639. **Kniffen System and Laying Down.** The objection to the Kniffen system for laying down is that the body of the vine soon becomes too stiff to lay down. It is better suited to hardy vines or to such localities as do not need this protection. H. P. VAN DUSEN.

644. **Ashes for Peach Borer.** Fresh ashes to the butts of Peach trees should be used very sparingly, but if leached it will not injure the trees, and will keep the borers out. A small mound of leached ashes put around in May, and scattered around in August, will answer two good purposes.

677. **Manure for Flowers.** Certainly there is no danger from using manure on Geraniums and Carnations, provided it is of the right kind, indeed no success could be expected with them without free manuring. The manure for flowers should be two years old at least, and so decayed as to appear like mold almost. The danger lies in the employment of crude dung, which is almost sure to cause the roots of Carnations to perish in hot weather, and which is much disliked by Geraniums. In soil already fairly rich much may be done in the way of providing food elements by using concentrated bone or other commercial manures. Clear soot water is a fine manure for Carnations.

678. **French Daisies from Seed.** Plants may easily be raised in this way, by sowing the seed in April in a hot-bed or greenhouse, or even in a cold frame. Then when the seedlings are large enough to handle pot them singly into small pots and later on shift them up into larger sizes. Grow in the summer in full sun, and if the plants are wanted for winter bloom keep all flower buds pinched out until September. Seed may be procured from leading seedsmen under the name of Chrysanthemum frutescens.

684. **Acacia Culture.** After flowering straggly-growing plants should be pruned into shape, and those plants that require it should be repotted. About equal parts of turfy loam and peat, with a liberal addition of silver sand, will be found a suitable compost for them; they should be potted firmly and the pots well drained. After potting the plants should have a light position in a frame or greenhouse, till they get established in the new soil. Through the summer they may be placed out-of-doors in a sunny position; stand the pots on coal ashes or slates to prevent worms from getting into the soil. Acacias may be readily raised from seed. For this purpose the seeds should be raised in pots, in a soil somewhat lighter than that used for established plants. The pots should be well drained and the soil made moderately firm; the seed should be sown thinly and lightly covered with soil. It will germinate in a greenhouse, but will do so more quickly if the pots are placed in a warm house, or plunged in a gentle bottom-heat. As soon as the young plants are fairly up they should be placed in a light airy position in a greenhouse or frame, keeping the soil moderately moist. When the seedling plants are large enough to handle they should be potted singly into small pots, care being taken not to injure the roots during this operation.—A. H. E.

593. **Moss on Trees.** Scrape off all as carefully as possible, then dissolve two pounds of potash in two gallons of water, and apply with a paint brush to the trunk and lower limbs as thoroughly as possible. After this give the trees a good dressing of well decayed manure and work it in as deep as possible. When fruit trees are covered with moss it shows that they have been sadly neglected.—C. E. P.

667. **Forcing Lily of the Valley.** Seedsmen and wholesale florists import the pips in fall in immense quantities. Pips are more used than are clumps. As soon as received the pips are boxed thickly and planted out-of-doors, as we do with "Dutch" bulbs. This rests them. For forcing, a north-facing house with a strong bottom-heat enclosed under the benches, or ordinary greenhouses, whose benches have provision for bottom heat, and are also eased over to afford shade and uniform temperature, are used. Into these, in a bed of sand or light earth, and about 2 inches apart each way, the pips are planted in successional batches, and kept well moistened overhead till the flowers begin to open. We can grow excellent Lily of the Valley here if we want to. Plant it out in rich, moist, but well drained land, and an open sunny exposure; mulch with cow manure in fall and let the mulching stay on in summer.—W. A.

572. **Pruning the Quince.** Calling the attention of a very successful amateur friend to this reply, he said that according to his experience his advice would be directly the opposite of that given in the February issue. He prunes severely; gets strong shoots, which produce ample and needful foliage to shade the inside of the tree, removes half to two-thirds of the fruit, and his trees are annually loaded with the finest specimens without spot or blemish. My own observation convinces me that the best and most satisfactory crops grown hereabouts are the result of severe pruning.—W.

634. **Fruit Growing in Pennsylvania.** (*a*) So many conditions enter into the problem of profitable fruit culture, that this can only be answered in a general way. If advised as to character of soil, size of plot and facilities for marketing, a much more satisfactory answer could be given. If only a small piece of land, say 1 to 3 acres, and having a near and convenient market, small fruits, such as Strawberries, Raspberries, Grapes and Blackberries would pay best. If a larger tract, 5 to 10 acres, and a distant market, Apples and Peaches (assuming that Peaches succeed in Wayne Co.) would be recommended. Peaches could be planted between the Apples and produce 5 to 10 annual crops before the growing Apple trees would necessitate their removal. In order to reap immediate returns it might be advisable to cultivate Strawberries and Raspberries among the orchard trees for 2 or 3 years. As to varieties, plant such as have proven best suited to your climate and locality. (*b*) Champion is among the earliest if not the earliest of Grapes, and though of poor quality is profitable on account of its earliness. Among the early Grapes of good quality, Hartford Prolific, Moore's Early, Worden and Early Victor are probably the leading varieties.—E. B. ENGLE.

638. **Hen Manure for Grapes.** It is not safe to use barn yard manure under Grape-vines when setting. A commercial fertilizer containing especially potash and phosphate, etc., or wood ashes, or both, will pay well. One-half to a pint sprinkled over bottom of hole and covered well with 3 or 4 inches of surface soil before putting in the vine.—H. P. VAN DUSEN.

668. **Forcing Asparagus.** If you wish to get rid of the Asparagus roots anyway, lift and force them and get out of them what you can; but if you wish to make money by growing Asparagus with the view of lifting and forcing it in winter, we fear you cannot do it. Asparagus roots under at least four years old are useless for forcing, and in order to lift these in good condition and without seriously injuring the roots much labor is involved. Asparagus when forced does not respond as generously as when grown out-of-doors; after three or four cuttings the plants won't pay for keeping any longer, for they have little or no recuperative power. They are sensitive to heat, especially bottom heat, and are therefore easily forced in the greenhouse or hot-bed, and as they don't need any light they are as well off under as on top of the stages. Asparagus may be forced from November till April. Before lifting for forcing let the plants have at least two months' rest, that is, cut over the stems two months before you lift the roots. In lifting, plow away a deep furrow from each side of the rows, then prop—never cut—out the crowns. Bring these at once into the greenhouse and on a flat surface pack them together as closely as possible, working some fine dry soil between the roots and plants, and finish off with an inch deep of soil over the crowns. Water thoroughly. A brisk bottom heat gives "grass" in 5 to 6 weeks before Christmas, and in 3 or 4 weeks towards spring.—W. F.

675. **Bark Lice.** A strong solution of soft soap is the old and reliable remedy. Professor Cook has improved on this by the addition of crude carbolic acid, making the mixture as follows: One quart of soft soap to two gallons of water heated to the boiling point, when one pint of crude carbolic acid is added, stirring the solution well at the same time. This should be applied early in June, and again some months later, with a cloth or scrubbing brush, to all affected parts. Fir-tree oil is one of the most recent and highly praised remedies for all species of Coccus. The oil is mixed with water at the rate of one fourth pint of the former to two and a half gallons of water and syringed over the plants about once a week. For strong-growing Dracenas, Crotons, etc., a somewhat larger proportion of the oil might be used. An application of fish brine has also proved effective, the oil with which it is charged doubtless penetrating the scale and killing the eggs beneath.

679. **Managing Pot Hydrangeas.** These will flower well every year if they are well fed, liberally watered when growing, and if they get plenty of air and sunshine. At the close of autumn, when they cast their foliage, by no means allow them to remain dry at the roots, but water them when they need it. Early in January prune them back to within two eyes of the base of the shoots made the previous season, thinning out all weakly shoots which do not yield bloom, and which deprive the stronger ones of light and nourishment. At that time they may be shifted, if so desired, into larger pots, using good loam and some decayed manure. Give them a light position and plenty of air in fine weather, and remove to the open air when all danger of frost is over. Plants may be kept in the same pots for years, but they must have liquid manure when growing, and abundance of water in hot weather. —A. H. E.

614. **Wasps and Bees.** You will certainly need no protection against bees, as *bees never injure sound fruit*. Wasps will puncture Grapes, etc., but with bees it is a physical impossibility. Their mandibles are not so constructed nor are they strong enough to be used in puncturing fruit. Numerous experiments have been tried, among the rest, one of putting the hives in an apartment and taking the bees' food away and making them fast for a few days at a time, and all the time exposing Grapes, etc., but the bees would not do any injury even under those conditions. If fruit bursts or is injured by the birds or wasps or something else, the bee will soon suck all the juice, but that is an advantage rather than an injury to the grower as the sound fruit is apt to rot by coming in contact with such injured or by the juice flowing over the sound fruit. Investigate this matter carefully and you will find bees are friends, not enemies.—L. W. LIGTY.

669. **Plums, Free and Cling Stone.** Wild Goose, cling; Miner, semi-cling; Lombard, free; De Soto, said to be free, but is not quite so; Maquoketa, I don't know.—S. M.

670. **Peach Stones.** Franklin Davis, Richmond, Va., can supply the Peach stones, but if they have been out of the ground all winter, they will not grow unless severely scalded and left in soak some days; then cracked and the kernels planted is the only chance.—S. M.

683. **Crabs for Stocks.** I have never tried it, but cannot see why it should not answer well, as the Hewes crab is a healthy, hardy, long-lived tree, and a fair grower.—S. M.

684. **Apples Falling Prematurely.** If it is not the Codling Moth that makes the Apples drop prematurely, there is something wanting in the soil. If the land is properly drained, and he gives the soil a good dressing of wood ashes and lime, prune a few while in blossom as an experiment. I have seen the same thing occasionally, but caused by excessive wet weather. If a tree acted that way with me over five years it would loose its head and a better one put on by grafting.—S.M.

591. **Mortgages and Fruit Culture** If you have had considerable practical experience in the cultivation of fruit, and have usually succeeded in making the crops profitable, you could safely mortgage your farm for a small amount for the purpose you refer to. If you know but little about fruit culture, don't do anything of the kind until you learn the full details of the business from some one who has succeeded in making it pay.—C. E. P.

658. **Preserving Grape Juice.** All that is needed is the processes applied to fruit canning, and this best of all beverages comes out pure and fresh, just as you open a can of Peaches or Tomatoes. The natural juice may be directly heated and canned, or it may first be boiled down by a low degree of heat and then be diluted when opened. A small wine press or a jelley press will answer for pressing out the juice.

597. **Propagating Hydrangea paniculata.** Cuttings of the ripened wood may be prepared during the autumn months. Select such shoots as can be spared and cut them into pieces of about 6 inches in length, then dibble them thickly into a well sheltered frame or else a box of earth in the cellar, putting each cutting down far enough to leave about 2 inches above the surface. If put in rows, the cuttings may be 1 inch apart, leaving 2 inches between each row. Insert them firmly and give them a good watering, leaving the lights off till the superabundant moisture has dried up, when they should be replaced. The cuttings will callus and form roots in the spring. Then put in the open ground, choosing as sheltered a spot as possible. Another way is to select the cutttings in summer when the shoots are young and growing. Take some 6-inch pots and half fill them with broken crocks, then fill them up with sandy soil, pressed moderately firm; the soil should be sifted through a sieve with a quarter of an inch mesh. The cuttings should be young and succulent shoots cut off at a length of from 4 inches to 6 inches, just removing the bottom leaves for the purpose of insertion. In order to prevent flagging, a small quantity only should be cut off at a time, or if it be necessary to gather a large number, keep the bulk of them covered up till wanted. Do not crowd them too much, otherwise they will damp off; and when finished give a thorough watering, enough to settle the soil well around them. Afterwards place them in a close frame till rooted, and see that it is really a close frame, otherwise the cuttings will flag, and when that takes place they take much longer to root. The lights may be taken off for a short time each morning in order to allow the cuttings to be examined and watered if necessary, but they must be replaced before the sun gets powerful, when a mat should be thrown over them, or even two if necessary. Thus treated they will soon root, when, if potted off at once, they will get nicely established in their pots before winter, and in the following spring may be planted out.—A. H. E.

592. **Scraping Tree Bark.** This is an excellent practice if it be not overdone, for harsh scraping in the spring is unnatural and often injurious. Obviously it is well, after the severity of winter is past, to give the trees a good rubbing, and thus remove the rough bark and moss which serves as a harbor for insects. But scraping down to the quick and exposing to the cold winds of early spring must result in injury. A moderately strong wash of potash water or soap suds will assist in cleaning the trunk and large branches and in giving a bright green and healthy appearance to the bark, but under generous culture this will seldom be found necessary. The practice of giving a heavy wash of caustic lime does not meet with the approval of our most advanced orchardists.

681. **Root-grafting Various Trees.** There are nurserymen who make a success of root-grafting all these named, except nuts; I know of none that practice that. Plums will do well root-grafted on Peach if small seedlings are grafted upon the roots. It is well to select sound wood that is firm, and whip or tongue graft.—S. M.

591. **Mortgages and Fruit Culture.** As a rule we say be slow to mortgage, although there are cases (and yours may be one of them) in which a small mortgage on a farm near a large city market may not prove burdensome. When times of pressure come, as they frequently do in these speculative times, the farmer owning a good farm free from debt is the most independent of men. He can generally raise enough of something to feed his family, if he cannot lay up anything. But if he has interest to meet, and his crops will hardly sell for enough to pay the cost of growing, it is pretty hard work to raise money to pay interest on mortgages. Again, it is a little hazardous planting a crop that a great many others are planting. There has been a great increase in Grape planting within a few years, and there is danger of a more rapid increase of supply than demand. This has been especially true of planting White Grapes. It will probably all come out right in the end, but there may be a time within the next three or four years when there will be an over supply of such Grapes in particular.

676. **Grapes for Profit.** Perhaps the majority of those who grow Grapes for market make no wine at all. If your soil is well adapted to this crop but few Grapes should be unfit for table or culinary use. Such as are not suitable for market as table Grapes, can usually be disposed of for canning and other cooking purposes, at a reduced price.

673. **Downing Mulberry.** This tree would be found entirely hardy with you on drained land.

680. **Primulas after Bloom.** Of the single flowering kinds most growers raise young plants every year from seeds, and throw the old plants away. The double Primulas, of which there are now many beautiful varieties, are at this season cut to pieces, each cutting having a small crown of leaves. The cuttings are planted firmly in small pots singly, in sandy peat, and plunged in the propagating bed till rooted; afterwards grown on near the glass, and moved to a cold frame in a shady situation in June, shifting them into four or five inch pots. Very choice varieties of the single kinds may be treated in the same way, or they may be shaken out and repotted in pots of the same size, shifting into about six inch pots in July, and growing in cold frames on north side of a building or wall till end of September.

628. **Pine Spines and Strawberries.** We also have used pine spines or needles for Strawberries with variable results, and the conclusions we have arrived at are that they are the best and cheapest winter covering we can get. Care should be taken in the spring to rake off all but sufficient to keep the ground covered so that the dirt will not spatter on the fruit. When the needles are left two or three inches thick they not only absorb the greater part of the rain fall during the fruiting season, when all the water possible should go to the roots, but they absorb a vast amount of heat from the sun's rays, and as the berries grow and bear down on them, the result is parboiled, turpentiney tasting fruit, while many of the berries dry up entirely before ripening. Such at least seems to have been the case in several instances that have come under our observation. On dry land or land with a gravelly subsoil I believe one should be quite cautious about leaving on much covering, but on our heavy retentive soil there is not so much danger. We grow our Strawberries in matted beds, and when the paths are dug out in the spring, some of the needles are drawn out into the paths. This is all that is necessary, as we only cover them about one and one-half to two inches deep in the fall, and by spring they settle down so as not to occupy more than half that thickness.—W. C. JENNISON, *Middlesex Co., Mass.*

683. **Marechal Neil Rose-buds.** It is not unusual for Rose buds to collapse from two causes; one is an excess of atmospheric moisture that settles around the base of the petals, and this, together with a low temperature, causes the lower part of the petals to decay. The other is that the tree is allowed to bear more flower buds than it can support, and, as a consequence, the growth and flowers advance so far, but, the roots not being equal to the strain, there is a sudden cessation of the vital forces flowing up to the flowers, and instead of expanding they decay. You must be the best judge as to which of these causes affects your plant.

643. **Grafting or Budding.** The roots of root-grafted trees are usually poor, and disposed to grow in one direction, giving the tree poor support. The union between root and graft is often poor, giving rise to an abnormal thickening, many weak sprouts, and finally the death of the tree. Root grafting can be done cheaply in winter, while budding cannot, and for this reason is often resorted to. Budded trees on seedling stocks have naturally disposed roots, and the bud is brought in contact with its corresponding growth—the stem—hence the union is a natural one.—W. H. MANNING.

611. **Golden-leaved Syringa.** It is one of the most desirable of colored foliage shrubs, with fragrant white flowers and clear, bright yellow foliage; the color lasting well through the season. Like its type the sweet scented Syringa, it does well in a great variety of soils and situations. Nurseries carrying a large line of ornamental trees and shrubs keep it in stock.—W. H. M.

A Reader's Conservatory.

My conservatory is merely a lean-to, size 8x10 feet, with a glass roof on the south side of the dwelling house. But I have well seen that to have built at a south end would have been much better, as then we would not have been troubled with the icicles. The conservatory floor is one foot lower down than the room it is off from, and the door-way into it was formerly a window. I always had a great passion for a bay window, but as I had none, and could not get one built on in good shape, I resorted to this plan.

With having the floor thus lower than the floor of the adjoining room, water can be used in every way plentifully. One of those dollar hand force pumps is splendid to throw water or spray over all the plants at one time, thus killing some insects also.

The heat is obtained from a stove set in the adjoining room near the doorway, and it warms the plant room sufficiently. The fire is kept up day and night, while on some cold nights, when the mercury is 40° below zero, we set vessels of hot water in the plant room on the floor. It is always plenty warm at the top, although the roof is only one thickness of glass.

There is a south and east window, both of which are double glass. These should not reach nearer the floor than 12 inches, for the light that comes fully to the bottom is nearly wasted.

The weather here has been so severe, or snappish, that nearly everyone has lost their plants, while mine in this little room have escaped frost, and are looking as healthy and rugged as outdoor plants in the summer. I have had flowers all winter in bloom, and at present (Feb. 28th) have Callas, Roses, Stevia, Sweet Alyssum, Crocuses, Hyacinths and Ageratum. This last has blossomed freely in a small sized tin can, one that oysters came in, and it is very nice to pick up for cut flowers. Bulbs also do best in tin cans. H. M. K.

Raising Horse-radish for Market.

The New York Herald recently compiled some information upon the culture of this plant. It says that the consumption of Horse-radish has been largely increased within a few years past. Formerly it was eaten mainly with roast beef, but now it accompanies oysters almost universally. Hundreds of tons are annually sold.

Horse-radish requires a deep, mellow, rich soil, so that the roots may be grown in one year large enough for sale, and the land then plowed out so as to clean out the myriads of small sprouts that would cover the soil with plants the succeeding year. A heavy dressing of fine manure should be plowed under in the spring, or coarse manure in the fall, and replowed deep just before planting, making the land deep and mellow. Then throw up into ridges three feet apart and plant the sets or pieces of root one foot apart along these ridges. Plant last of April to middle of May, and sow Radishes, Beets, Lettuce, etc., between. The additional crop will be no hindrance.

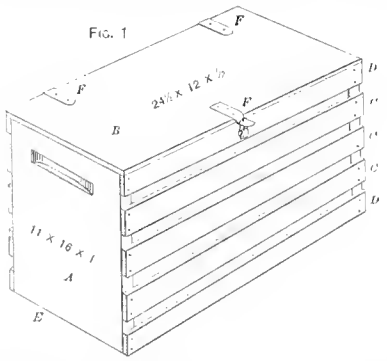
The yield of good land is four to six tons per acre, though often less than half that much. It can't be grown well on poor or stony land, and there is no use in trying it. But it is profitable where there is a market for it. It is about as hard to kill out as Canada Thistle or Couch Grass. It is a good deal of work to prepare the roots for sale. They must be trimmed with a knife, the large roots assorted from the small, and then carefully washed with a scrubbing brush on a board so as to look attractive.

A Cheap Berry Crate.

E. W. REID, BRIDGEPORT, OHIO.

I have examined many baskets and crates for marketing fruit and have come to the conclusion that the one I now use is the most complete and cheapest crate made. I do not think it is used outside of Belmont Co., Ohio. One small town in the county above puts out hundreds of thousands of bushels and this is the crate they use. Many may think what is the object in this cheap crate, and say I would rather have a better. Were you placed as we are you could see the advantages.

In the first place it can be made at home in the shop on cold and wet days in the winter, and that much saved. It is a plain piece of work; anyone that can drive a nail



straight can put it together. I have them sawed out at the planing mill in the winter when work is slack and can have it done right. I take a sample crate to the mill and say "Here, what will you saw out 100 for?" They get so much and no more, and if they can't do it for that price, I can get some one that will. The strips used are made out of the waste pile mostly and they can afford to do it cheap. I have just contracted for 100 bushel crates this past week, ready to nail together, for $30. I will give full cost of everything.

Lumber ready to nail for 100 bu.	$30.00
Nails for 100 bu	3.00
Leather for hinges and fastenings	1.50
1 gross of buckles, (144)	.80
1 man 4 days, $1 per day to put together	4.00
	$39.30

The cost of these you will see is about 39¼ cents each; to buy them ready made would cost me $65, besides the freight, which would add not less than $5 or $10. How many berry growers in the country to-day are paying from $0.75 to $1.25 each for crates that I would not trade for this 39 cent crate, and how many are paying from $5.50 to $9.00 per M for baskets when they can be bought for $1.75 and $2.00 in the flat and made at home in the winter! It is the little things that eat up the profits; let us take care of them.

These last years I have lost many crates through carelessness of commission merchants and the express co.; had I paid $1 or $1.25 for them there would have been no difference, so you see I am ahead that much.

I will give dimensions of the crate, and then illustrate the Figure.

	Length.	Width.	Thickness.
End	16 in.	11 in.	1 in.
Lid	24½ "	12 "	½ "
Strips for siding and bottom:			
6	24½ in.	3 in.	⅜ in.
4	24½ "	2 "	⅜ "
3	24½ "	3½ "	½ "

In looking at Fig. 1, A shows you the solid end with hand hole sawed with circular saw; B, or lid, is worked on leather hinges and fastened with strap and buckle; C shows you three of the six strips on one side, 3 inches wide; D two of the four 2-inch wide; E is for the three bottom strips; F shows fastenings and hinges. A quart basket is about 3½ inches in height, which places the top above strip C and gives room for the slat and that no fruit can get out. The opening is about the middle of the basket in each tier, so that air can pass through every basket, and also at opening in bottom.

Fig. No. 2 shows you the slat that goes between the baskets. Size:

	Length.	Width.	Thickness.
2 strips	22½ in.	1⅝ in.	¼ in.
1 strip	22½ "	2½ "	¼ "
5 rails	11 "	¾ " tapered to ¼ at bottom.	1 in.

G represents the two outside strips, H the middle; this allows the basket to rest on both and the air to pass from the bottom. I represents the rails; the outside ones only tapered on one side. The three inside rails, taper from ¾ to ¼ so as not to mash the fruit, but to rest on edge of basket, as shown in Fig. 3.

There are many advantages in this crate. One of the best is the slat; it is 1 inch high, it enables us to fill the baskets rounding full and will not mash. When package arrives at destination they are not down in the basket. All baskets are "topped" by pickers; what I mean by topped is that all berries are turned with stems down and nothing but the fruit is seen. For large berries this has no equal, for most other crates have from ⅜ to ½ inch rails, which is too light.

Next is a hand tray for gathering baskets, as shown in Fig. 4; this is a very handy arrangement. The pickers are given their rows and not allowed to get out of them until finished; the man that gathers the baskets has full control of them. This tray holds 8 baskets, so he is enabled to carry one-half bushel each trip, and can see if any one is not picking clean, or that no loud talking is carried on while picking. Baskets are furnished pickers in rows, and when four are filled they receive a ticket, and baskets taken to packing house from sun. When 8 of these 4 quart tickets are held by picker they are exchanged for 1 bushel ticket.

Should any tickets be lost by pickers it is their loss. When the ticket is given it is the same as money, and some one else will be likely to find it. All tickets are collected at night and account taken. They are paid every Saturday afternoon, if so desired by them. I pay 1½ cents per quart the season through for all kinds of berries, but only pay 1 cent at pay day; the ½ cent is kept until they finish, and if they quit before that time they get but 1 cent.

I find this the only way that we can compel them to clean up the patches, and not get the "headache" when berries get scarce.

"Amateur" Work and Stepping up Higher.

JOHN M. STAHL, ADAMS CO., ILL.

Doubtless not a few mechanics and other city workers would better their financial condition and live more independently were they to engage in market gardening or small fruit growing; and it is equally true that the writers who have been of late so often advising the city worker to get out in the country and go to work on a few acres, do not know what they are talking about. Not one city worker of each twenty could accept or would do well to accept this advice. It requires information and training to be successful in rural occupations. Any fool cannot farm successfully these days, nor can he raise vegetables or fruits successfully or profitably, though he may have experience. True, some people, wide awake and earnest, may, by reading horticultural and gardening books and papers for some time, get such information that they can be successful without experience, but they are exceptions.

Again, how is the mechanic, without money, or with a very little of it at the best, to get land and seeds and implements and manure to make a promising beginning. They may very likely rent the land; but many implements, a horse, and much manure are to be got, and how can they be got without money? It would be nice if every dependent, hand-to-mouth city worker could be a successful gardener, florist, or fruit grower; but this is more than Utopian.

FIG. 2

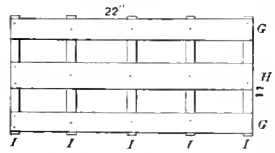


FIG. 3

Nevertheless, there are many who live in villages and towns, and some who live in cities, that could not do better than take up gardening as an *adjunct* to their present work. He who has thirty feet square to spare from his back yard, need not lack vegetables of his own growing, at least. I knew a man, a boarding-house keeper, to grow on a space scarcely larger than this, all the fresh vegetables required for nine people. Of course he kept up a succession and used manure lavishly. Let the mechanic who can, raise vegetables for his own family; likely when he has done this, he will find that he can do more with profit. If he has children, they can do most of the work, and will be all the healthier and happier for doing it. They would better do this than roam the streets and vacant lots. The curse of city or village life is "nothing for the children to do;" flowers and vegetables will take it away.

Great oaks from little acorns grow; and the largest business frequently had a small beginning. Of every ten millionaires in this country, nine were poor boys. I read yesterday of Mr. Cozad, who, until he took a partner the first of the year, had the largest nurseries owned by one man west of the Mississippi, and the account said "he began business in a small way." Of course he did. That sounded natural. If he had begun in any other way it would have been unusual. Who can tell what the back-yard village gardeners may not grow into? The mechanic or accountant may not escape his present occupation, but may not his son? It is better to have the son a gardener than a knight of labor. And it is not impossible that in a few years the back-yard garden may have proved so profitable and pleasant that the mechanic goes outside the city and in due time sells what he formerly bought. It would be a change much for the better.

This word "amateur" has grown troublesome of late. Once I thought I knew its meaning, now I don't. But I believe the back-yard gardening in the town or village would be amateur work; might be such after it had expanded over vacant lots, to the confusion of cows and goats. And it is the sort of amateur work that I like to see. For, while much rot and lush are written about the pleasures and profits of gardening by people who think Cucumbers grow on trees, and while it is never play to make profit out of the earth, yet it would be better for the individual and for society if many of our city workers got out into the country. Foul air and beefy food have made them discontented. Give them the fresh air and vegetables and fruits of the country, and they would be contented, and more than negatively law abiding—positively law upholding. Enough mechanics and bookkeepers have found a better living and better health on truck patches to demonstrate that many more might be as they are.

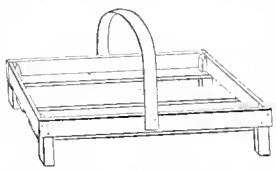


Fig. 4. A Picking Stand.

THE COMPLETE GARDEN.*

XIV.

BY A WELL-KNOWN HORTICULTURIST.

SELECTIONS OF HARDY ORNAMENTAL WOODY GROWTHS.

Continued from page 112.

Class 7.—*Kinds of a distinct pyramidal form of growth.*

BIRCH. Pyramidal, (*Betula alba fastigiata*) B-C.
ELM. Monumental, (*Ulmus campestris monumentalis*) C.
Dampier's Pyramidal, (*U. montana pyramidalis Dampieri*) B.
Dove's, (*U. Dovei*) R.
LARCH. American or Hackmatack, (*Larix Americana*) A.
LOCUST. Globe or Parasol Acacia, (*Robinia inermis*) D.
OAK. Pyramidal, (*Quercus robur fastigiata*) B.
POPLAR. Lombardy, (*Populus fastigiata*) A.
EVERGREENS. Of many kinds.

Class 8.—*Kinds conspicuous for bloom in the early spring months.*

TREES.

AMELANCHIER, SNOWY MESPILUS. (*Amelanchier Botryapium*) B-E.
Service-Berry, (*A. Canadensis*) B-E.
ASH. Flowering, (*Fraxinus ornus*) C.
BIRD-CHERRY. European, (*Prunus padus*) C.
CHERRY. Flowering, Double White, (*Prunus avium flore pleno*) R.
Siebold's Double flowering, (*P. Sieboldi alba plena*) B.
JUDUS TREE, OR RED BUD. American, (*Cercis Canadensis*) C.
Japan, (*C. Chinensis*) F.
MAGNOLIA. Hall's Japan, (*Magnolia stellata*) F.
Soulange's, (*M. Soulangeana*) C.
Thompson's, (*M. Thompsoniana*) F-D-J.
Showy-flowered, (*M. speciosa*) C.
PEACH. Double White-Flowering, (*Prunus vulgaris flore alba pleno*) B-E.
Double Rose flowering, (*var. rosea flore pleno*) B-E.
PLUM. Common Double-flowering, (*Prunus domestica flore pleno*) F.
VIRGINIAN, OR WHITE FRINGE. (*Chionanthus Virginica*) C.

SHRUBS.

ALMOND. Double White-flowering, (*Prunus communis flore alba pleno*) B-E.
Double Rose-flowering, (*var. flore rosea pleno*) B-E.
Dwarf Double White-flowering, (*Prunus Japonica flore alba pleno*) B-E.
Dwarf Double Red-flowering, (*var. rubra pleno*) B-E.
AZALEA. Smooth, (*Azalea arborea*) H-G.
Clammy, or Swamp, (*A. viscosa*) H.
Purple, or Pinxter Flower, (*A. nudiflora*) H.
CURRANT. Yellow-flowering, (*Ribes aureum*) G.
Crimson-flowering, (*R. sanguineum*) G.
Double Crimson flowering, (*var. flore pleno*) G.
DAPHNE. Mezeron or Common, (*Daphne Mezereum*) H.
White flowering, (*var. flore alba*) H.
Cneorum, (*Cneorum*) H.
DOG-WOOD. White flowering, (*Cornus florida*) C.
Round-leaved, (*C. cercinata*) G.
EXOCHORDA. Grandiflora G.
FORSYTHIA, OR GOLDEN BELL. Fortune's, (*Forsythia Fortunei*) G.
Viridissima, (*F. viridissima*) G.
HONEYSUCKLE, OR TARTARIAN BUSH in assortment, (*Lonicera Tartarica*) E.
English Fly, (*L. Xylosteum*) H.
JAPAN QUINCE. Scarlet, in variety, (*Pyrus*) G.
LILAC in variety, (*Syringa*) F.
PLUM. Double-flowering, (*Prunus triloba*) G.
SNOWDROP, OR SILVER BELL TREE. Four-winged, (*Halesia tetraptera*) F.
SPIRÆA. Double flowering Plum-leaved, (*Spiræa prunifolia*) G.
Thunberg's, (*S. Thunbergii*) H.
Nicondert's (*S. Nicoderti*) H.
TAMARISK, AFRICAN. (*Tamarix Africana*) E.
VIBURNUM. Rough-leaved, (*virburnum rugosa*) G.
Lantana-leaved or Way-faring Tree, (*V. lantanoides*) G.

Class 9.—*Kinds conspicuous for bloom—flowering in June.*

TREES.

APPLE. Garland flowering, (*Pyrus malus coronaria odorata*) B-C.
Chinese Double Rose flowering, (*P. malus spectabilis*) B-C.
Double flowering, (*P. malus baccata carneaplena*) B-C.
BUCKEYE. Red, (*Æsculus Pavia rubra*) G.
carnea superba, (*Æ carnea superba*) C-D.
Long Racemed, (*Æ parviflora*) C-D.
HORSE CHESTNUT. European or Common, (*Æsculus hippocastanum*) A.
Double white-flowered, (*var. alba flore pleno*) A.
Dwarf, (*var. nana Van Houttei*) C.
Red flowering, (*Æ rubicunda*) a.
LABURNUM, OR GOLDEN CHAIN. Common, (*Laburnum vulgare*) C.

FLOWERS OF JAPAN QUINCE.

Alpine or Scotch, (*L. alpinum*) B.
LOCUST. Bella rosa, (*Robinia pseud-acacia bella rosa*) R.
Rose or Moss, (*R. hispida*) C.
Grand-flowered Acacia, (*R. grandiflora*) C.
MAGNOLIA. Lenne's Red-flowering, (*Magnolia Lenneï*) C.
THORNS, in variety, (*Crataegus*) C-H.
YELLOW WOOD, OR CLADASTRIS, (*Cladastris tinctoria*) B.

SHRUBS.

BRAMBLE. Double-flowering Blackberry, (*Rubus fruticosus*) B.
CALYCANTHUS. Common, (*Calycanthus floridus*) G.
CEANOTHUS, OR RED ROOT. American, (*Ceanothus Americana*) H.
COLUTEA, OR BLADDER SENNA. (*Colutea arborescens*) F.
DEUTZIA. Graceful or Slender Branched, (*Deutzia gracilis*) H.
Crenate-leaved. (*D. crenata*) H.
Double-flowering, (*var. flore pleno*).
Double flowering Purple, (*var. purpurea pleno*).
Rough-leaved, (*D. scabra*).
MOCK ORANGE, OR SYRINGA, in variety, (*Philadelphus*) F-H.
OLEASTER. Garden or European, (*Elæagnus Hortensis*) F.
ROSES. See elsewhere.
SPIRÆA. Reeve's or Lance-leaved, (*S. Reevesiana*) H.
Reeve's Double Lance leaved, (*var flore pleno*) H.
Reeve's Robust, (*var. robusta*) H.
Douglas's, (*S. Douglasii*) G.
Mountain Ash-leaved, (*S. sorbifolia*).
VIBURNUM. Common Snow Ball, (*Viburnum opulus sterilis*) F.
High, or Bush Cranberry, (*V. opulus*) F.
Japan or Dwarf Snow Ball, (*V. plicatum*) G.
Plum-leaved, (*V. prunifolia*) G.
Pear-leaved, *V. pyrifolium*) G.
WEIGELIA in variety, (*Diervilla*) F-H.

Class 10.—*Kinds conspicuous for bloom in the summer or early autumn.*

TREES.

KŒLREUTERIA PANICULATA.
SUMACH. Purple Fringe or Smoke Tree, (*Rhus cotinus*) F.

SHRUBS.

ALTHEA, OR ROSE OF SHARON, in variety, (*Hibiscus*) F, G.
BRAMBLE. Purple, (*Rubus odoratus*) H.
CLETHRA. Alder-leaved, (*Clethra alnifolia*) H.
CORCHORUS. Japan, (*Kerria Japonica*) H.
HONEYSUCKLE. Ledebour's (*Lonicera Ledebourii*) F.
HYDRANGEA. Large paniele-flowered (*Hydrangea paniculata grandiflora*) G.
HYPERICUM OR ST. JOHN'S WORT. Kalm's, (*Hypericum Kalmianum*) G.
SPIRÆA. Fortune's, (*Spiræa callosa*) G.
Fortune's Dwarf White, (*var. alba*) H.
Billard's, (*S. salicifolia Billardi*) E.
STUARTIA PENTAGYNA, E. G. J.

Class 11.—*Conspicuous for autumn attractiveness, foliage or fruits.*

TREES.

LIQUIDAMBAR OR SWEET GUM, (*Liquidambar styraciflua*) B.
MAPLE. Red or scarlet, (*Acer rubrum*) B.
OAK. Scarlet, (*Quercus coccinea*) B.
Laurel or Shingle, (*Q. imbricaria*) B.
Red, (*Q. rubra*) A.

SHRUBS.

EUONYMUS. Burning Bush or Spindle Tree (*Euonymus atropurpureus*) G.
HAMAMELIS OR WITCH HAZEL, (*Hamamelis Virginica*).
HYDRANGEA. Oak-leaved, (*Hydrangea quercifolia*) G.
WAXBERRY. White-fruited or Snowberry (*Symphoricarpus racemosus*) G.
Red-fruited or Indian Currant, (*S. vulgaris*) H.
AMPELOPSIS, Climber.

Class 12.—*Kinds, aside from Evergreens, that are attractive in the winter.*

TREES.

BIRCH. Cut-leaved Weeping, (*Betula alba pendula elegans*) B.
Paper or Canoe, (*B. papyracea*) B.
European White Weeping, (*Betula alba*) B.

SHRUBS.

BERBERRY. American, (*Berberis Canadensis*) G.
DOGWOOD. Alternate-leaved, (*Cornus alternifolia*) F.
Red Branched, (*C. sanguinea*) G.
Siberian, (*C. Siberica*) G.
EUONYMUS, G.
LINDEN. Yellow twigged (*Lilia Europea sulphurea*) B.

Class 13.—*Hardy climbers of a woody nature.*

AMPELOPSIS. Virginia Creeper (*A. quinquefolia*) Also called "American Ivy," and incorrectly "Woodbine."
Veitch's, (*A. tricuspidata, Syn. A. Veitchii*).
Pepper Vine, (*A. bipinnata*).
Royle's, (*A. Roylii*).
Indivisa, (*A. indivisa*).
WISTARIA. Chinese, (*W. sinensis*).
Chinese White, (*var. alba*).
Double Purple, (*var. flore pleno*).
Japanese, (*W. brachybotrys*).
Dwarf White, (*W. Japonica alba nana*).
Purple, (*W. multijuga*).
White, (*var. multijuga alba*).
American or Shrubby, (*W. frutescens*).
White American, (*var. alba*).
HONEYSUCKLE OR WOODBINE, (*Lonicera*).
Scarlet Trumpet, (*L. sempervirens*).
Brown's Scarlet Trumpet, (*var. Brownii*).
Small Red, (*var. minus*).
Yellow Trumpet (*L. flava*).
Canadian, (*var. Canadensis*).
Hall's Japan, (*L. Halleana*).
Japan Evergreen, (*L. brachypoda*).
Golden-veined, (*var. reticulata*).
Common Woodbine, (*L. Periclymenum*).
Monthly Dutch, (*var. Belgica*).
Mangeville's (*L. Caprifolium var. pallida*).
Standish's, (*L. Standishii*).
CLEMATIS. Jackman's, (*C. Jackmanii*) and others of its class.
Scarlet, (*C. coccinea*).
Common Wild, (*C. Virginiana*).
TRUMPET VINE. American, (*Tecoma radicans*).
Purple Flowering, (*var. astrosanguinea*).
Great Flowering, (*T. grandiflora*).
DUTCHMAN'S PIPE, (*Aristolochia Sipho*).
BITTER SWEET OR STAFF TREE, (*Celastrus scandens*).
AKEBIA *quinata*.
ACTINIDIA *polygama*.
VITIS HETEROPHYLLA, (*Cissus variegata*.)
CAROLINA COCCULUS, (*C. Carolinus*).
CANADIAN MOONSEED, (*Menispermum Canadense*).
GRAPE, (*Vitis*).
Summer, (*V. æstivalis*).
Frost, (*V. cordifolia*).
Vitis indivisa.
Vitis vulpina.

JASMINE. White, (*Jasminum officinale*).
SILK VINE. Grecian, (*Periploca Graeca*).
IVY. European, (*Hedera*).
Irish, (*H. Helix var. Hibernica*).

Class 14.—*Evergreen Trees and Shrubs.*

Under this head are brought those woody growths that hold their leaves over winter,

FLOWERING BRANCH OF ROSE OR MOSS ACACIA.

both conifers (cone-bearers) and others. As a class they are less tenacious of life than are the deciduous trees and shrubs which become denuded of their leaves annually. This is partly accounted for by the fact that they require to be transplanted when in full leaf, because never leafless, hence susceptible to great injury after digging if the roots are allowed to dry out in the least degree. No pains must therefore be spared to preserve, not only as many of the roots and fibers as possible in digging the trees, but also to keep the roots constantly moist at all times when out of the ground. This, in the case of trees to be conveyed some distance from the nursery, may be accomplished by wrapping the roots well in damp sphagnum. In the case of short removals, if the soil is allowed to adhere to the net work of fine roots peculiar to most kinds, the same end may be gained.

(*To be continued next month.*)

The Vegetables of a Great Market.

C. W. IDELL, NEW YORK.

New York is probable the largest vegetable market in this country, for not only do its citizens consume large quantities, but in a measure supply the demands from the towns surrounding it. This market is supplied not only with the domestic vegetables but also with those from foreign countries.

We receive Potatoes from England, Scotland, Germany, Bermuda, Nova Scotia, and Prince Edward's Island, and Onions from Bermuda, France, Spain and Canada. Germany takes the lead in supplying us with Cabbage. Bermuda sends us our first Onions, Potatoes and Tomatoes.

These Onions, owing to their mild flavor, are very popular and are usually eaten raw. The seed for the Potatoes are sent from this country, but owing to the difference in soil and climate the products are unlike the seed, but they are a first rate article. The Tomatoes are small and after being wrapped in paper are packed in small crates, containing from four to six quarts each.

Our Southern States furnish us with large quantities of vegetables, but the leading ones are Potatoes, Tomatoes, Onions, Kale and Spinach. Before the Southern crops are exhausted those from Long Island and New Jersey begin to arrive. These two sections are immense gardens, acres of which yield three crops annually, some four crops.

Long Island produces large quantities of Potatoes, Tomatoes, Cabbage and Cauliflower, to say nothing of the other kinds of "garden sass," such as Peas, Beans, Beets, Radishes, Pie Plant, etc., etc. Some sections of New Jersey send large quantities of Asparagus, Potatoes, Celery, etc. In the southern parts they produce the finest looking and best quality of Sweet Potatoes. Connecticut supplies us with the best quality of White, Yellow, and Red Onions.

During the height of the season a daily line of steamers is run from Norfolk, Va. with an occasional extra steamer to clean up. Quite recently the Penn. R. R. Co. has extended its lines to Norfolk and now brings vegetables from this and intermediate points. With the exception of the extreme eastern end of Long Island, the farmers cart their produce to market and sell it, as do some of the farmers in New Jersey, but the bulk is sent by rail, and a limited part by boat.

The foreign stock is sent by steamships, and the rate of freight is lower on some articles than from the Western States, as the highest rate on a bushel of Potatoes is only fifteen cents, while the duty is the same. It is useless to speak of the immense supply and demand for Potatoes, for it is so generally known. The quantity of Cabbage consumed almost passes belief, for it is boiled, stewed, fried, pickled and krouted, and eaten raw. Turnips do not come up to the standard that our people require for food, and are by no means popular and are always sold at a low price.

Egg plants are popular, and as a rule sell for good prices, but before the season for them is over the demand for them grows weak and prices rule low. Tomatoes are a standard article of food, and people seem never to tire eating them. Yet the crop extends long after Jack Frost visits us, for the New Jersey cultivators pull and store them in warm places to ripen slowly.

Of late years Asparagus has become extremely popular. Only small quantities are sent from the South, but "Oyster Bay," Long Island, is noted for its superior "grass," and the New Jersey growers have competed so closely with them for the popular flavor that now they produce it equally as good. This article is popular with the canners, who during the season go around daily among the dealers and buy all of the good stock left, thus keeping the market free for the next morning arrivals.

Rhubarb or Pie Plant is now very popular with us. The first arrivals from the South are sold for good prices. Yet, in time, the quantity increases to such proportions that a stranger in our City would wonder what could be done with it, yet it is sold readily. When cheap our pie bakers are our best customers, for some of them consume a load in one day. It is tied in bunches of from three to six stalks each, according to its size, and sold by the bunch.

Our first Cucumbers come from the Eastern States, where they are grown under glass, and first arrivals have been known to sell for fifty cents each. Later they come from the South, and Long Island produces immense crops of them. Some farmers contract in advance for their entire crop with pickle dealers, while others salt them for future sales, but the producers of small quantities generally ship them to the city green, to be sold for them. The Germans are fond of the large ripe ones. They cut them open lengthways, and after scraping out the contents refill with chopped Cabbage seasoned to their taste.

Cauliflowers are also salted down in large quantities by the dealers in pickles for winter use. A certain variety of string Beans are salted for mixed pickles and are very popular among our foreign residents. Spinach is our most popular "greens." It is grown largely in the South, as well as on Long Island. Kale is another variety, but although consumed in large quantities, is not so popular, nor does it sell for as much as Spinach. The varieties of Squashes are as a rule cheap, although used to a great extent by our pie bakers instead of Pumpkins, but are not appreciated for family consumption as they should be.

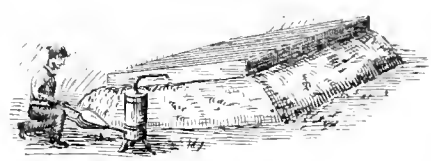
The "Water Cress" is a popular vegetable, although consumed in limited quantity. It is marketed in the early spring in small handleless baskets, which are packed in boxes or barrels for shipment. It is used largely in the fashionable saloons of our City to serve with oysters.

With the exception of the farmers who cart their produce to market, the vegetables are sold by commission merchants. There are other dealers who buy all of their stock in large quantities, and who sell to another class known as "marketmen," that is, they keep local markets in the various parts of the city. During the height of the season these men are down town by 2 A. M. to procure their stock, and as soon as their wagons are loaded return home in time to supply their customers for breakfast. Some grocers keep a good supply of vegetables, but as a rule their stock is limited to soup greens.

Plant Lice in Hot-beds and Frames.

Fumigation with Tobacco is less easily applied in the case of hot-beds, frames or pits than in a greenhouse. To have the fumigator inside of the closed frame is to call for the removal of some of the plants for giving it room, while other plants in close proximity are almost certain to suffer from heat. Then, too, it is difficult to regulate the quantity of the smoke, and one of the commonest accidents in work of this kind is such an excess of heated smoke as to injure the plants, if not to break the glass. At best the fumigation of frames is a job gardeners ordinarily look upon with dread.

A better way for conducting this operation than the common one is shown in the accompanying engraving. This consists of keeping the fumigator outside of the frame, and connecting it with the latter by a hose that leaves the fumigator from the top, and then employing a common hand bellows to drive the smoke into the frame. The fumigator is one of the ordinary pipe pattern, but with a closed top except the hose connection. The bellows mouth-piece enters the apparatus at its extreme bottom to admit the current of air below the fire and cause a draft. The hose is provided with a tin nozzle, which should fit a hole bored through the side of each frame to be fumigated.



Fumigating a Hot-bed.

With this arrangement the quantity of smoke to each frame is entirely under the control of the operator. The work of fumigating is quickly done and without any inconvenience to the operator from smoke. One apparatus will serve many frames.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. MAY, 1888. No. 8.

The Spring-scented buds all aronnd me are swelling;
There are songs in the stream, there's health in the gale;
A sense of delight in each bosom is swelling
As float the pure day-beams o'er mountain and vale.
The desolate reign of old Winter is broken,
The verdure is fresh upon every tree;
Of Nature's revival the charm, and a token
Of love, O thou spirit of beauty! to thee.
—*Willis Gaylord Clark.*

NO GAIN ever comes from working a wet soil.

WHERE WILL IT STOP. One thing is certain, the size of the Strawberry has more than doubled within the last 40 years.

WILLIAM PARRY. In the death of this eminent horticulturist, at Parry, N. J., on Feb. 28, the country sustained a great loss. He was a most intelligent and successful cultivator of fruits and nursery stock, and the originator and introducer of numerous new varieties that have become famous, notably the Kieffer Pear. He was 71 years of age.

CATCH THE THIEVES. There is one class of plant "raisers" who should be vigorously suppressed. We refer to those who steal bedding plants from flower beds about town at the planting season. Then the plants are put into pots and the next day the stolen article is peddled out at low rates. This evil has grown to a grievous extent in many places, and our advice to florists in these places is to form a protective association, offering a reward of $50 or more for the conviction of any plant thief. This has been tried in some eastern cities with good results.

APPLE DRYING IN WESTERN NEW YORK. We note in a New York paper the following: The Apple-drying and fruit-evaporating industry of Western New York developed with astonishing rapidity last year. Over a dozen new and large evaporators have been erected in Niagara county alone. The market for this kind of fruit is found in Europe, and dried Apples are supplanting in a great measure the green fruit. The barreled Apples rot so in making the transatlantic trip. Many European firms have taken the trouble this year to send their agents to this country to buy from personal inspection rather than through their commission men. The blow the dried fruit strikes at the green is surprising. It is estimated that over $100,000 have been expended in evaporating Apples and canning them in this county alone. Of course this county naturally leads all the others as being the chief Apple market of the world, but Wayne, Monroe, Orleans, Chautauqua and Cattaraugus are not far behind.

"WOODBANKS."

Popular Gardening and Fruit Growing's New Experimental Grounds.

As boy and man the conductor of this journal had previous to three years ago always been engaged in fruit growing and gardening in one or more branches. For many years it was as active manager, in part, of one of the largest fruit and market gardens near Buffalo. About five years ago, however, the march of the city's improvements had so crowded on its outskirts as to render the sale of his grounds desirable, and this took place. It was following on this event that he turned his attention to popular horticultural journalism, and shortly afterwards, as controlling partner, to publishing the present successful journal. At the same time he temporarily took up his residence in Buffalo, first to be at the very helm of affairs in the publication office during the critical period of founding the journal; second, to for a spell mingle somewhat freely among retail consumers instead of as always before among producers of horticultural products, and lastly he desired time in which to select a new fruit farm and garden, properly located, and which might be conducted in the interests of American horticulture in general, and of the readers of this journal in particular. The time for making a change from the basis referred to has now arrived and the conductor takes pleasure in stating that a new and most desirable farm has recently been chosen and negotiated for by him, and at this writing the transfer is in progress. This farm, which shall probably be known as the Niagara Experimental Grounds, is located in that most famous fruit section, Niagara Co., N. Y., La Salle post office, and in the very midst of numerous fruit farms, market gardens, evaporating establishments, etc. Its site is one-half mile from Niagara River on the banks of an arm of said river, hence the name "Woodbanks," and five miles above the great cataract. At this late hour, before the May issue is printed, we have neither space nor time to go into particulars concerning the place and its future; this information will keep until next month. Sufficient to say that here the editor will live and here—being but 35 minutes ride from the Buffalo office—he will jointly conduct the journal and manage the farm in the interest, and as he believes, to the great profit of all readers.

Forcing Rhubarb and Asparagus.

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

In these days of low prices for nearly all horticultural products, it behooves both the florist and truck grower to use every means to help out the unfortunate condition of affairs; a condition brought about in the florist's department, particularly in growing cut flowers for market in the vicinity of large cities, by over-production, while in the fruit and vegetable department in the past ten years I think the depreciation in price is undoubtedly due to the immense areas now cultivated in the Southern States, and that these products are shipped to New York and other large cities about three or four weeks before the local crop is ready, thus blunting the edge of the appetite, so that when our home grown crops of fruits or vegetables come in they are less valued. They are now grown to such an extent, that it is doubtful if the prices realized average much more than at the North, but labor in the South costs as yet but about one-half its cost at the North, and land probably not one tenth as much as it does in the vicinity of New York, Philadelphia, and Boston, where nearly all market gardeners yet pay $50.00 per acre rent per annum, and in many cases without a lease. But be it as it may, the fact remains that the growing of fruits and vegetables in the South has seriously damaged the Northern growers whose main reliance to make ends meet now is in cultivating under glass, either by the use of hot-beds, cold-frames or greenhouses, and it is the adaptation of these to the culture of Rhubarb and Asparagus to which I will now refer.

About the first week in April I happened to call on an old market gardener, who that day had just begun to make his first pulling of Rhubarb from hot-beds, which had been put down about thirty days before. It was then selling, he said, at $1.00 per bunch, and he was getting fifteen bunches from each of his 3 x 5 feet sashes. Asparagus, he claimed, paid even better.

Now, although hot-beds will answer every purpose for forcing Rhubarb and Asparagus, it is short-sighted economy to use them at this day for such purposes. The modern greenhouse, 20 feet wide, heated by a flue is even better than a hot-bed, and when heated by steam or hot water is infinitely better, because you can use and control the greenhouse in all weathers, and above all, you can make it produce a double crop by growing Lettuce, Radishes, or flowering plants, if so desired on the top of the benches, while Rhubarb and Asparagus can be grown under the benches, as they require no light.

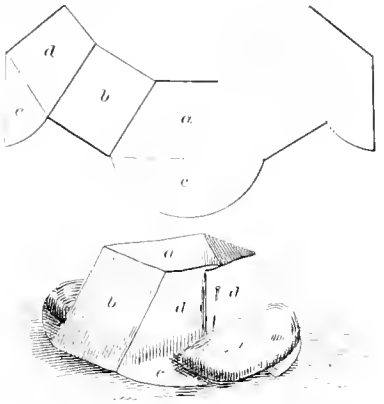
The main reason why the forcing of Rhubarb and Asparagus is profitable, is that it requires the foresight of some years of preparation before the roots are large enough to force. If to be done on a large scale, the cheapest way to go at it is to sow the seed (both of Rhubarb and Asparagus) on well enriched and deeply cultivated land; sow rather thickly in rows about three feet apart and thin the young plants out the first season to three or four inches, next season thin out again, so that the plants will stand fifteen inches apart in the rows. In three or four years from the time of sowing, according to the quality of the land, the roots will be large enough to force, but in lifting them up, only every other plant should be taken, which will then leave the plants standing thirty inches apart in the rows, and three feet between. This space will be none too much for the full development of the remaining roots, as the larger they are, the more numerous and strong will the roots of the Rhubarb and the shoots of the Asparagus be. Of course they must be dug from the ground before the severe weather sets in in the fall, in this latitude not later than the end of November, but as they should not be taken in to force until January, they must be placed in some dry and sheltered place, and covered completely with twelve or fifteen inches of leaves, which will be sufficient to exclude frost from the roots until the time of starting them in heat force. This may be begun about January 1st, all that is necessary being to jam the roots as close together as possible on the damp flooring under the greenhouse benches. It is not necessary to shake any soil over them, if the roots are closely packed together, and they are not likely to need water except such of them as are near to flue or pipes.

The first lot, put in January last, will be ready by February 15th, if the temperature has averaged 70 degrees. This crop can be gathered in about two weeks, so that the roots can be taken out and thrown away (as after forcing, they are of little value), and the space filled up again with the roots from outside. This second crop, if put in March 1st, will be marketable from the 5th to the 15th of April, at which time forced Rhubarb and Asparagus usually sells higher than in February.

It will be seen that the main expense in Rhubarb and Asparagus forcing is to keep up the supply of the roots grown in the open ground. To do that, new sowings must be made every year and the whole process of growing the plants to the forcing size gone through as already described.

When an abundance of strong roots of Rhubarb or Asparagus can be grown at a moderate cost, where land is cheap, it must for a long time continue to be a most profit-

able crop, if gone into in a thorough manner. No slipshod work will do; the care of the young seedlings, the weeding and cultivating, must be continued year after year, until the roots get to the forcing size. This is the sole reason why the crop is so unfailingly profitable, because not one grower in one hundred can afford to wait, or has the patience to do so.



Paper Shield for protecting Young Plants.

Of course, your amateur readers can apply the same instructions given for a market crop for what might be wanted for private use, and even if no greenhouse is at hand, a warm cellar with a furnace in it will answer just as well as a greenhouse. In such cases, it will be more convenient to pack the roots closely in boxes, and sift enough of fine soil or sand over the roots to fill up the interstices, as they will dry quicker in boxes in a cellar than on the damp floors under greenhouse benches.

It is not very easy to get exactly at what a greenhouse forced with Rhubarb or Asparagus will pay per square foot, as, of course, much depends on where it is sold, and the quality of the crop. I think it is safe to say that this crop forced even under the benches will give an average of seventy-five cents per square foot of space, which, if two crops are taken, will make $1.50 per square foot. Now, when it is known that few florists or market gardeners average more than seventy-five cents per square foot off their greenhouse surface devoted to flowering plants, it can be easily seen how profitable the forcing of Rhubarb and Asparagus, at the present prices, really is. And as before said, the reason for this unusual price is assignable to nothing else than the fact of the necessary preparation before the roots for forcing can be obtained.

Protection to Young Plants.

W. P. WARING, BELKNAP CO., N. H.

For several years I have employed an inexpensive device for protecting young plants from chilly winds, and especially those of Cucumbers from the attacks of beetles and bugs at a time when the plants are yet too young and weak to withstand their ravages. This consists of a paper shield of the form shown in the sketch, and made by myself after the pattern also shown.

To make these shields any kind of cheap, stiff paper answers. The pattern here shown is enlarged so that the section marked c, which forms the sloping end, is three by four inches in size, although any other dimensions may be adopted. For cutting out the papers a form made of a thin board is employed, and then the preparing of a large number of papers becomes a small matter. The shape is such that there is little wastage of material.

The letters which appear in the two cuts indicating the parts of the shield both in the flat and as finished show how the paper is to be folded. A pin or thorn serves to keep the box together, while two stones or some loose earth laid on the flaps (c) prevent the wind from disturbing its position.

The Choicer Water Lilies and Their Culture.

GEO. RICHARDSON, TRUMBULL CO., OHIO.

Most flower lovers who have heard of the rare aquatics imported from Egypt, Japan and China would no doubt be pleased to learn how they flourish in this country, and especially as regards their hardiness. Some kinds, its is true, are only suitable for greenhouse culture, but others of the first introductions have proved to be perfectly hardy. When we speak of an aquatic being hardy, we do not, however, mean that it will stand actual freezing, but if placed in the water below the reach of frost it will endure the winter. I will describe only such as I have in my own ponds, and which have been thoroughly proved as regards to hardiness. I have no greenhouse and my ponds are only supplied with surface water, and, of course, rise and fall according to freshet or drought. And in this part of Ohio, the winters are very severe, ice forming on my ponds last winter to the depth of fourteen inches.

The Nelumbiums I will take up first. These should be planted in very soft ground in about one foot of water, and like all aquatics, the richer the ground the better. They are rapid growing plants of a rambling nature, and soon spread over a small pond. The roots burrow very deep in the ground, and this prevents their being injured by cold. The flowers rise two or three feet above the water, and when fully expanded are about the size of a common dinner plate, but sometimes much larger.

The Sacred Lotus (*Nelumbium speciosum*). This, taking it all in all, is the most desirable one of all the family. It is one of the most profuse bloomers; a single root planted in the spring will produce from twenty to fifty flowers the first summer, and that is a very small per cent of what it will produce the second summer. They are a bright pink and present something very fascinating in their noble forms. They commence to bloom about the first of July, and continue to bloom till late in October. The first frosts seem to have little effect on them, and in fact, some heavy enough to kill all other flowers do not prevent the Nelumbiums from continuing to bloom.

The Japanese Nelumbiums are the same as the above, except that they are not such good bloomers, they are of various shades of pink, and are thought by many to be more lovely than N. speciosum.

The White Lotus (*Nelumbium nuciferum roseum*) does not do well for me, but some claim it to be the finest of the whole family.

Turning to Nymphæas,—of which the common white Water Lily (*N. odorata*), is the most common native form,—these should be planted in about two feet of water. The flowers and leaves float on the surface.

Nymphæa rosea is the pink Water Lily, and this is undisputed the queen of the family. It is one of the greatest of bloomers, of a deep pink color, much larger than any of the white kinds, and is noted for its delicious fragrance. There is a pink Lily that grows wild in the Southern States, but it is odorless and inferior to this the true rosea.

Nymphæa flava, the yellow species, is worthy of a place in any collection. The flowers are about four inches across, of a bright golden yellow, and deliciously scented. This plant, although from Florida, has proved to be perfectly hardy.

Nymphæa tuberosa is the best of the white kinds; it is about six or seven inches across, very full and double, and of snowy whiteness.

Nymphæa odorata, the common wild Lily, is too well known to need a description.

A Strawberry Crinoline.

In the annexed engraving is shown a simple contrivance that has attained to some use in England for supporting the foliage and fruit of Strawberry plants above the ground. It is made of wire and its shape and manner of applying are clearly enough indicated in the engravings to require no further explanation. Such a support for Strawberry plants would of course be of no service in field culture by the matted system, but in gardens where the plants are kept in distinct hills it would answer a good purpose, not only by protecting the fruit but in aiding clean culture, say nothing of the increased neatness to be secured by its use.

Horticultural Notes, by Samuel Miller, Montgomery Co., Missouri.

GRAFTING—CARE OF GRAFTS. I have often seen men graft a good sized Apple tree when they grafted every limb, and were greatly exercised about the grafts blowing off when grown a few months. Not more than one-half of the limbs should be grafted in one season, and then some of the sprouts should be left to grow out of the grafted limbs, which should be pinched back when grown, say three inches, and about midsummer may be removed. These sprouts help to carry off the surplus of sap so that the grafts don't grow too fast and succulent, so as to be easily broken off by storms.

Even the grafts when they have made a foot of growth may be pinched at the tips, and this repeated again when grown six or eight weeks more. In this way I am satisfied that fruit can be obtained one year sooner when a new variety is looked for.

RESTORING DRIED GRAFTS. Some time ago a packet of valuable Pear grafts came to hand from 1,000 miles away. They were not properly put up, were 14 days on the way and completely shriveled when they arrived. If I had been at all hasty they might have gone into the waste basket, but it struck me that the germs in the buds might not be dead, so they were wrapped snugly in damp moss for several days, then set half their length in a tumbler of water for some days. They swelled up somewhat, but still the wrinkles were not all out. They were then packed in wet moss for near a week again, by which time they were as plump as when taken from the tree, with one exception. That one was past redemption.

These grafts were set into thrifty bearing Pear trees ten days ago, and will grow, if appearances are not very deceptive. The party who sent them was at once informed of their condition, who at once sent me a few more, which arrived since in nearly as bad a state as the first, but I can bring them out.

If grafts are wrapped in damp moss, then tied up in well-oiled paper air tight, they should go a month without drying. I used to send plants and scions to Salt Lake City,

Wire Support for a Strawberry Plant.

Utah, before the railroad was built, and they always reached there in good condition.

JUNE BUDDING. One week or ten days before this is to be done the tips of the twigs to be used to take the buds from should be pinched off, and it will develop the buds so that they will be better to set. My experience with June budding has not been by any means satisfactory.

PLUMS—RUSSIAN APRICOTS. Just now, April 9, my Plum trees are in full bloom,

and if the fruit sets I will see that the curculio doesn't spoil them this season.

The Russian Apricot is in full bloom, showing that the fruit buds can stand 14 below zero, and to my astonishment we will have a fine sprinkling of Peach blossoms.

THE NUT FAMILY. Is it not a little strange that while the whole country is wide awake to all the fruit we can raise that this family has not received more attention? It is time that the English Walnut is being extensively planted in the South and in California, and the Chestnuts are being waked up. Why not pay some attention to the finer Hickories and Pecans also.

Last week I grafted on thrifty young Hickory trees, from one inch to three inches in diameter, with paper shell Hickory Nuts, a large native Pecan, a large Shellbark, and a few of Nusbaum's Hybrid Pecan. This latter will have a name in the land in a few years if the writer of this is not greatly mistaken. Last spring a friend sent me a fine graft of it, which I succeeded in growing on the common Hickory. Took some fine grafts from them and set some more the last week. It need not astonish anyone if in a few years we will see groves of excellent nuts growing where now the trees bear only worthless nuts. On my place I have one hundred of such trees that will be converted into valuable ones as fast as I can raise grafts enough to work them with. Some I grafted cleft, some crown, and some side grafting. The success of this will be given to your readers.

The Mistake of Improper Handling of Market Fruit.

BY J. N. STEARNS, KALAMAZOO CO., MICH.

Next in importance to growing good fruit comes the proper handling of the same and putting it upon the market in the most attractive shape. Sharp competition, if nothing else, demands this if one would secure the best prices. By rendering fruit attractive I do not mean that it be done by that petty deception of putting the small fruit in the bottom and the large on top of the package. What I do mean I will illustrate in the care of the Strawberry.

In the first place, the Strawberry plants should be well mulched before ripening, to prevent soil spattering on the fruit, and to preserve its beautiful gloss. This latter should further be preserved by careful picking and handling. I never allow a picker to take hold of the berry and pull it off, for this is sure to cause a bruise, if slight, on two sides of it, and in hot weather hastening decay. I instruct my pickers to take hold of the stem close to the hull, and with the thumb or finger nail pinch it, and with a slight twist it is easily separated, leaving the hull and about $\frac{1}{4}$ inch of the stem, which is a great protection to the fruit, and in addition to the perfect gloss, it adds materially to its appearance.

Some of the pickers object a little at first to this mode of picking, but I usually have no difficulty after explaining, that by preserving the hull and stem they fill up more than enough faster to make up for the extra care: and once pickers are educated in this way, they find it just as easy as the careless way of pulling off the hull, and spoiling the fruit, as many do. I can tell, some distance away, if a picker is pulling his fruit improperly, by a snapping sound it gives in parting from the stem.

A FERN-LEAVED BEECH, BETWEEN 25 AND 40 FEET HIGH.

Each picker is provided with a carrier, holding four boxes, and the fruit is assorted as picked, which saves one handling, as every time fruit is handled over its beauty is more or less marred. For my first selection last season I realized $12\frac{1}{2}$ cents net at wholesale, while thousands of quarts, equally as good fruit, were sold in the same market for 8 cents, the difference being mainly in the handling. I recall now a load of berries I saw in market last season, that, solely because of careless handling and marketing, the producer found it difficult to sell at any price; which, had they been well ripened and properly handled, would have sold readily for 15 cents per quart. I really felt sorry for the man, and privately gave him a few hints, and resolved to write a few lines on this greatest mistake of the fruit grower. The above idea should be carried out with reference to all the other fruits as they come along.

I often hear it remarked, that I get better prices for fruit than other growers in the same vicinity. It may be, but from years of experience I am satisfied it is not in the superior quality of the fruit, but in the attractive manner in which it is put on the market, as nearly everything brings its price from its appearance to the eye of the buyer.

Some years since a New York commission man wrote me that not over $\frac{1}{4}$ of the fruit received in that market was of the class I term properly handled, while the demand for such was fully $\frac{3}{4}$ of all the calls, therefore always bringing an extra price, and, as he expressed it, he believed in that lay all the profit in fruit growing.

The Beeches for Ornamental Planting.

That the members of the Beech genus have never reached a greater degree of popularity with American planters is unfortunate, for no finer class of ornamental trees for many situations can be found than these. The reasons for their comparative scarcity is not difficult to discover; for they are known to be not the easiest trees to transplant, and when successfully transferred are not remarkable for rapid growth. Such reasons may satisfy the hasty planter, who measures desirability in a tree by its ease of removal and quickness of growth, and too often feeling satisfied with a Poplar or Soft Maple, but for the true lover of arboreal beauty these should have little weight. To all such we strongly commend the Beeches for lawn planting.

The American White Beech (*Fagus ferruginea*) is the most common native species and a handsome tree. Among its chief characteristics are a smooth gray bark, even to old age, which imparts an air of neatness to the tree that is pleasing; the light and shade like that of the European and some other species is disposed horizontally in layers; the leaves are dark, thin and glossy, and so thickly set that its shade is the darkest of all the forest trees.

The European Beech (*F. sylvatica*) is in many respects similar to the last, but has more spreading branches, and these in time often droop gracefully almost to the earth. This species is the parent of the numerous other ornamental Beeches, which have done so much to make this class worthy of great attention from all intelligent planters. Among its valuable varieties the following are conspicuous:

The Purple-leaved Beeches: Of these the common Purple-leaved Beech (*var. purpurea*) has dark, reddish-purple foliage in the spring, changing to crimson later on, and then to purplish-green. River's Purple-leaved Beech (*var. purpurea Riversii*) is a much darker, hence more effective, variety than the last, and has grown to be perhaps the most popular of all the Beech genus, for ornamental use. Another improved variety known as the Large-leaved Purple Beech (*var. purpurea major*) has remarkably large leaves of a dark purple color, and smooth and heavy. The Copper-leaved Beech (*var. cuprea*) resembles the Common Purple in most respects, but has brighter-colored leaves, with darker colored young shoots.

In marked contrast with the purple-leaved group of Beeches is the Golden-leaved Beech (*var. aurea variegata*), which possesses leaves that are in color deeply margined with yellow, on a green ground, rendering the tree singularly distinct and handsome.

The Fern-leaved and Cut-leaved Beeches present a distinct type of great value for ornamental planting. That enthusiastic grower of fine trees, H. W. Sargent, some years ago said that if he could plant but half

a dozen trees, the Fern-leaved Beech (*var. asplenifolia*) would certainly be one of the first. Of this fine variety we present an engraving made from a photograph of a superb specimen growing in the nursery grounds of William S. Little, on East Avenue, Rochester, N. Y. Its foliage, as the name suggests, is of a delicate fern-like form, being handsomely cut. During the growing season its young shoots are like tendrils, giving a graceful, wavy aspect to the tree. The tree here figured is between 25 and 40 feet in height, and considerably more than this in breadth, and without doubt is one of the finest in the country.

There are still other valuable sorts that have sprung from the European Beech. Among these are the Weeping Beech (*var. pendula*), a most picturesque tree with long tortuous branches, upon which the foliage is apparently piled in masses. This tree often seems to be deformed when young, but in time becomes very ornamental. The Broad-leaved Beech (*var. macrophylla*) is another, and which possesses a vigorous habit, with large handsome foliage. The Crested-leaved Beech (*var. cristata*) also belongs here. This is a curious variety with small, curled leaves, that are not remarkable for beauty.

The Beeches prefer light, loamy soils; the roots keep near the surface, on which account grass does not thrive well under them unless it be kept well watered. All the kinds bear the shears well, on which account they are suitable both for small grounds and for use in hedges.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

SEASONABLE MATTER. If Strawberries have been mulched with any coarse material, pass over the rows and stir it up slightly with a fork, for if not done, say on heavy soil, it is apt to "sour" the soil somewhat.

We are asked by many if it will do to enrich the Strawberry beds in the spring. Yes; if old beds, scatter well rotted manure right on the plants this month, but if new beds and plants have made a strong growth, no. You should, however, just as the plants begin to show their blossoms, scatter a little straw or hay over the vines and along the side of rows.

Throw a heavy mulch around Raspberries and Blackberries as far out as cultivator teeth reach, and give both two or three good cultivations before blossoming season, and if it should be dry keep cultivator going, running teeth shallow.

Be sure to start flower seed in pots or boxes in house as soon as you can after reading this. If lawn is poor scatter a little well-rotted compost over it.

If you are transplanting Raspberries of your own and you are badly driven with work early in season, remember this can be done after they have grown 6 to 9 inches, when weather is damp and ground is fit.

Keep the Raspberry, Blackberry and Strawberry plants cultivated up to blossoming season, but run shallow, and if it keeps dry, keep cultivator going once a week up to fruiting season, very shallow.

Mulch Strawberries now (if not done before) with hay, straw or decayed sawdust or tan bark.

Raspberries and Blackberries can be safely set in damp weather after they have sprouted 6 or 8 inches, by taking up a good root.

If not done before and you have an old Strawberry bed, scatter among vines a liberal quantity of well-rotted compost.

MAKE THE CULTIVATOR SAVE HAND LABOR. Help is scarce and the more you can save hand weeding and hoeing, by the use of horse and cultivator, all the better, and we do it in this way now. We mark our field one way with a corn-marker, teeth 3 to 3½ feet apart, and plough out furrows 6 feet apart the other way, and as we plant the Raspberries or Blackberries, we put one at each crossing in the furrow (being careful to plow last or after we have marked out with corn-marker). By thus doing, we can cultivate both ways for two years, and too, halfway between the plants and furrows we plant Corn or Potatoes, making them same distance as Raspberries, and thus get a good crop the first year that pays for use of ground.

THE BEST REMEDY FOR PEACH BORERS. Get a pint of crude carbolic acid costing 25 cents, and mix it with twenty to twenty-five gallons of wash-water that has considerable soap dissolved in it. A good plan is to take a tight barrel and put in 3 or 4 gallons of soft soap, with as much hot water to thin it, then stir in the pint of carbolic acid and let it stand 24 to 48 hours. Then add 12 to 15 gallons of water and stir well. Then apply to base, body and crotches of the tree with an old brush. If the crude acid cannot be obtained one-third the quantity of the pure will do. Apply any time from April to June, according to locality, or say when trees are blossoming out.

WE HAVE NOTICED that young fruit trees where weeds had been allowed to grow and seed, were not disturbed by rabbits, where in other blocks clean from weeds the trees were badly damaged. May this not show that their feeding on the weed seed keeps them from eating the bark of trees. A gun fired occasionally among trees will frighten rabbits away.

SPRING PRUNING OF GRAPES. Don't believe the man who says spring pruning don't hurt the vine. In pruning select the best branches of this year's wood, leave two or three buds, cut off all the weak and take out any old worthless wood, cut back all this year's wood to two or three buds. Every good bud will set from two to three bunches of Grapes another year, so you see it is an easy matter to get too much fruit on a vine. We clipped the foregoing from the Grangers' Bulletin. As a rule it is not advisable to trim Grapes in spring when "sap is flowing," (?) but we have known of vines on soil that made a tremendous growth of wood and yielded no fruit to speak of, but made productive by pruning at that season of the year, so it only shows that we cannot hold to everything recommended in fruit growing as being at all times applicable.

APPLE BLIGHT.

In a recent article T. T. Lyon seems to doubt if the cause of Apple blight has ever been ascertained. Now I think the cause is easily discovered. If you will examine a limb affected with blight, just as the leaves begin to turn yellow, you will find a wound in the bark, and under it a wound in the wood; just where you find the wound in the limb you can, with a magnifying glass, discover an insect in shape like an alligator or scorpion, often so small as to be difficult to see with the naked eye. You will find one of these in every blighted limb in this latitude. The blight makes its appearance in June. We are in the latitude of St. Louis. I don't know any name for this destructive insect, nor do I know any method of destroying it. If horticulturists next summer will make the examination they will verify the truth of my statement; and if some one will find a method of destroying this minute insect he will be a public benefactor.

The above is from the American Rural Home, and if it proves correct (which we see no reason to doubt) it will prove valuable information, and we believe by the timely application of poisonous liquids by spraying these little varmints can be destroyed.

PEAR BLIGHT.

"This disease usually attacks the trees in early spring, makes slow progress and is quite invisible until hot weather sets in, then frequently develops so rapidly that the branches seem to succumb all at once, the leaves and bark turning quite black. The only serviceable treatment that looks toward prevention is to give the orchard such culture as will best promote a uniform and healthy growth, without stimulation. In the majority of soils and situations this may be accomplished by keeping the orchard in grass, if it is over three or four years old, and topdressing with commercial fertilizers or a moderate amount of stable manure. After the trees show the disease, the best course is to remove and burn the affected branches, making the cut a foot or so below the lowest discolored bark. If the prevalence of the disease amounts to a severe epidemic some trees will be entirely lost, notwithstanding the greatest vigilance, and the careful cultivator will at once replace them with new stock."

We clip the above from the pen of Dr. Arthur, Geneva, N. Y., from the Rural and Workman. We have both grown in grass and cultivated, trimmed and left untrimmed, yet on all the dreaded disease has done its work, and the best remedy we have found is to slit the bark on one side of limb and body to the ground as quick as it makes its appearance. Oiling the tree with pure linseed oil is also an excellent prevention. The plan of growing short bodies and low headed trees, and having two or three bodies, is recommended by Ulster county growers, so that if one part of the tree is ruined another will be left.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

GROWING EARLY TOMATOES. Geo. Summey's manner of growing Early Tomatoes is similar to my way, only I prefer to transplant first time into flats; and second time I use one quart tin cans, with top unsoldered and taken off, and a few holes punched in the bottom for drainage; prefer them to pots or boxes, for there is more room for the roots, and when transplanting to the field there is no danger of breakage, and the same cans can be used for years. My best early so far is the Improved Alpha; it never rots.—*A. M. Nichols, Licking Co., Ohio.*

EARLY PIE PLANT. This connecting link between Apples and Currants is anxiously looked for by many a housewife in spring, but it is often two or three weeks later than it should be from being located in a shaded or neglected corner where the ground does not thaw out, or warm up quickly. It should have the warmest, sunniest place in the garden, and be protected from the north by a close fence or building. If the plants are fully exposed to the sun, as they should be, covering the ground with a thin layer of soot, or black muck, will help the soil to warm up quickly. As a rule, Pie-plant is not divided and transplanted often enough, and becomes in consequence dwarfed and slender, because the roots cannot extend as rapidly as the crowns multiply. Transplanting in the spring causes the loss of a year's use, but it can be taken up and divided in August and reset in a new spot, and the following spring will produce fine large pie timber. To those who like to watch the development of seedlings, and their variation from each other, the growing of pie-plant from seed affords a very interesting experiment. If the seed is sown in very rich ground and properly tended, the young plants will grow until frost, but show a great difference in vigor and habit. Some will have stout stems and leaves nearly a foot long, others less. In October the young plants should be transplanted into a row in a sunny place and mulched heavily with leaves so the ground will not freeze. Some of the rankest will do to cut from to a limited extent the following spring. All should be allowed to grow until the third summer, when those plants showing the best combination of earliness, flavor and vigor, can be divided and transplanted for future use, while the others may be dug up and thrown away.—*L. B. Pierce, Summit Co., Ohio.*

A HARDY BEGONIA. Has Mr. Falconer ever tried the hardiness of *B. discolor*? I have cultivated this species for many years and regard it as one of the best of the genus. The leaves attain a length of eight inches, with a breadth of six; they

are of a bronzy-green color with deep crimson veins, and are very beautiful, especially when the sun is shining through them. I plant the tubers in the shade of an Apple tree, where their foliage would make them worth cultivation if they never bore a flower. In August each plant produces a large loose cluster of delicate pink flowers, of good size and lasting some time in full beauty. I take them up in October for reasons stated in the note on Galtonia candicans, but I have often left a few in the ground, entirely unprotected, and these have always started well the following May. I believe that, by using this species as one parent and B. Pearei, Veitchi or racemiflora for the other, a race of tuberous varieties might be produced which, with a covering of leaves, would survive any winter we are likely to have in the latitude of Boston.

PERSIMMONS. Perhaps our native Persimmon has been subjected to cultivation, if so I have not heard of any results. Yet the following would seem to show that it is not incapable of improvement. In September, 1863, I found in a ploughed field near Culpeper, Va., a tree full of fruit of unusual size, (averaging, to the best of my recollection, about two inches in diameter) and perfectly ripe and free from astringency, although there had been no frost.

REMOVING STAMENS from flowers which are to be hybridized is no doubt frequently necessary, but not always. If you plant the seed formed by Gladiolus purpureo-auratus which has grown near the ordinary Gandavensis varieties, you will find that in nearly every case the resulting flowers will show that the hybridization has been effected without human assistance, and that such seed will produce the flower of the female parent in only the rarest instances. I have raised over five thousand seedlings in this way and only three of these produced the purpureo-auratus flower. —*W. E. Endicott, Norfolk Co., Mass.*

ORANGE RUST. Regarding this among Blackberries and Raspberries, I know of no preventive any more than I do for Peach Yellows or Pear blight, black knot on Plum trees, or scab on Apples. When a plantation is but slightly affected, and wanted for further fruiting, our practice here is to remove such canes as soon as possible, and burn root and cane, and scatter salt or lime where the affected canes were removed. This application may neutralize the spores that may have become detached from the canes before removal. When, however, the plantation becomes badly affected, self protection and common justice towards others should require that they be dug up and burned. The land should be for some years devoted to other crops, until the soil is entirely renovated, the roots destroyed and every trace of the fungus removed.

PEACH TREE GRUB. The application of coal tar to a young Peach tree would surely be a "heroic" remedy so far as the grub is concerned, and the tree too, for neither would be likely to survive more than one year. My practice is clean culture. In the spring remove the soil from the crown of the tree; if any grub is there he will show it by his chips. This allows the bark to harden and gives the grub less chance to work, and if he does work he is easily removed by a sharp-pointed pocket-knife. The application of wood ashes, I think, has some effect on the grub. I know it has on the tree if properly applied; but if placed in quantity against the crown of a young Peach tree, the caustic alkalis will burn the tree like fire and kill it.

THE CODLING MOTH. This is the most destructive enemy the Apple grower has to deal with in Michigan, and I dare say in nearly every other State. And yet how little do we know about this insidious foe. If C. E. P. will take the pains to examine the cocoons in the latter part of June, or even in August, he will find his birds have flown. In Michigan we can grow three broods of these insects in one year and then not crowd the season. In fighting these insects, we have abandoned our old tactics, as unsatisfactory and useless, and are now going for them with the spraying pump. This Moth, like the Anarchist, works in the dark, and all we can do is to cut off its posterity. The Moth has no occasion for food, for she lays her eggs and dies. We never can succeed in destroying all the larva, hence, like the Curculio, they remain with us all summer. —*W. H. Smith, Boston Harbor, Mich.*

BEST VINE FOR SCREENS. Page 123. "Every alternate flower is white and yellow" is not strictly correct of Hall's Japan Honeysuckle. They open pure white and turn yellow afterward in warm weather the second day. The Variegated Japan Honeysuckle, although it does not flower so freely, as Hall's has the advantage of it in beauty of foliage, which is green and gold in summer, the gold turning to crimson as cold weather comes on.

SNYDER BLACKBERRY. P. 125. I do not understand why you call this dwarf. It is even stronger than Kittatiny with us, but the fruit is small and not of extra quality with us, and its value is in its hardiness for cold climates only. There is no danger of over-manuring Kittatiny here, but it does best in muck which has been exposed to frost and air. The best berries I ever got from it were from plants growing in an old heap of decaying muck turf.

THE CANNA. Page 124. Many varieties of Canna are difficult to winter, every broken root and every stump where a top has been cut off being inclined to rot. I find it an advantage to grow a few plants of such varieties in pots and winter them in the pots they were grown in, without cutting off the tops at all, except to remove the leaves as they dry off. Very small plants will be best to use for this purpose in spring.

DISTANCE TO PLANT BLACKBERRIES. Page 132. In large fields we find it a great saving of labor to plant at equal distances each way, and cultivate in both directions, only leaving a little hand hoeing close to the hills.—*By W. F. Bassett, Atlantic Co., N. J.*

DOUBLE PETUNIAS. My experience with Petunias differs somewhat from that of L. W. G's. in March number. Have grown plants from seed and cuttings that produced double flowers, and were as free flowering and required no more care than the same number of Pansies.—*E. L. Patterson, Crawford Co., Pa.*

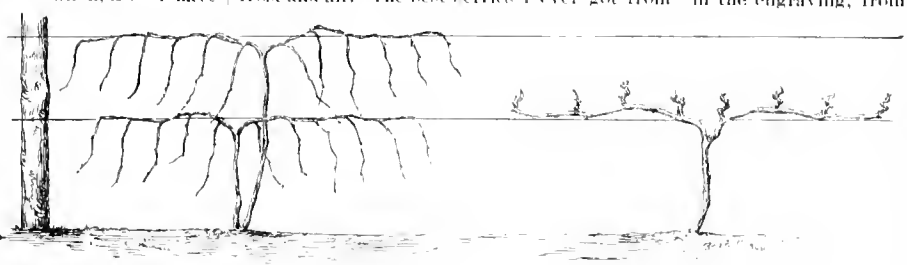


Fig. 1. Improved Kniffen System of Training Illustrated.

Fig. 2. Horizontal Arm System showing elongated spurs on an old vine.

Two Other Systems of Training the Vine.

D. S. MARVIN, WATERTOWN, N. Y.

THE KNIFFEN SYSTEM. Of the various other systems besides the renewal fan system described last month the Kniffen system comes nearest in some important respects to a good system. It does away with the arms of old wood, but it has two great defects. Its lower arms in a few years are useless, because the sap will all go to the arms upon the upper vines and deprive the lower ones of nutriment and thus fail. Again, the main trunk will, in spite of all that man can do, clog and fill up so that the sap can no longer circulate freely, the same as in every other except the renewal system referred to last month.

The first objection may be avoided by starting two canes from the ground as in Figure 1 annexed. Here the sap flows to the lower arms just as vigorously as to the upper, and in so much it is a decided improvement. But in a windy climate the fruit sways upon the hanging canes so much that it is often bruised, and sometimes spoiled. It does much better for early than late Grapes, the early varieties being picked before heavy fall winds come. It may be characterized as the lazy man's method of training, and has this other advantage, a larger crop of Grapes is growing because the sap and the fruit forming elements is thrown more into the fruit than into the canes, which hang, and thereby cause a retarded growth. It is common to all slovenly systems of training, and apt to be the mother of neglect in failing to properly summer or rather spring prune thin or break out the redundant canes in the early part of the season.

When properly performed this system is certainly one of the best of the old systems, and as before stated, better adapted to the foreign than our native vines, because the resin in the sap of our natives will sooner or later clog and fill the circulatory ducts of all old wood above ground; there is no known way to avoid this except by the renewal system illustrated last month.

SPUR AND DOUBLE ARM SYSTEM. Figure 2 is a drawing of a ten year old vine, as near as I could sketch it, trained upon the double arm system. It will at once be seen that the spurs have become elongated, all the economies and activities of the vine have had to go on through those spurs, and the consequence is that the circulatory ducts have all become so closed that the vine no longer bears much fruit. It did well and bore good crops for four or five years. Its usefulness in its present condition is at an end. I consider this about our worst system of trimming.

On this vine there is a spur, not shown clearly in the engraving, from a cane that fortunately pushed out at the bottom of the vine from an adventitious bud. This is exactly what I have been waiting for and shall allow to grow unchecked, and next fall if I get wood enough shall saw the old vine all off just above this spur. If this bottom spur had not so fortunately appeared I should have cut off the right hand arm last fall and left a cane upon the first spur to be bent down and supply its place. This would usually cause a cane to push near the bottom, but if the cane had not appeared I should have cut off the left arm in the same way a year later, and again waited for a spur from the bottom to form a new vine and which I will then train upon the renewal system; thus changing from one system to the other.

One of the great facts to be observed in this double arm system of pruning is that it cuts off all the current year's growth except the spurs. This is too violent a change on the vine's economies; all the activities of the vine are confined to these spurs, the old wood contributing nothing but a channel for the work, while the renewal system gives the vine from six to eighteen or more feet of new wood. This the vines greatly appreciate, as shown by their increased crop.

Profitable Potatoes.

GRANVILLE COWING, DELAWARE CO., IND.

Among novelties in Potatoes, some of the very best are Green Mountain, Summit, Everitt, State of Maine and Empire State. Of many hundred varieties tested on the Rural New Yorker's experimental grounds, the first two named proved most productive—Green Mountain standing highest. On my soil Empire State exceeded all others in productiveness, and next to it in that respect stood Summit and Everitt.

In shape the tubers of Green Mountain are oval, slightly flattened, in size large to very large, skin white, very handsome and of good quality. State of Maine resembles Green Mountain in every respect except that the tubers are more round. Both mature in August and are long keepers. Summit originated in Northern Ohio, where it is fast becoming very popular. Tubers long, oval, skin buff, eyes large and but few, from medium to large size and of best quality. A most productive and desirable variety.

While on my grounds Empire State proved to be a stronger grower and more productive than any other variety, it exhibited a tendency to rot and its tubers were not quite as handsome as those of the other varieties I have named. In general appearance it resembles Burbank, but averages much larger; skin white, quality good, and matures in September. Everitt is the most productive early Potato I have ever tested. It is large, smooth and handsome, of good quality and matures with Early Rose. Early Pearl, Early Maine and Pearl of Savoy are all of the Early Rose type, smooth and beautiful and in every way desirable.

Of older varieties for the main crop I have found none better than Lee's Favorite, Early Ohio, Magnum Bonum and Jordan's Prolific. Lee's Favorite is more productive than Early Ohio and equal to it in every other respect.

The selection of pure seed of the best varieties for planting would probably double the Potato crop of this country without enlarging the area.

Talks By An Illinois Cultivator.

TOMATO TRAINING. Mr. Chenoworth, of Davenport, Iowa, succeeded the past season in raising three Tomato vines on trellises to the height of seventeen feet. One was a red Trophy, the others Golden Plum. They made an immense crop. Mr. C. is sure he can raise vines next year to a height of twenty-five feet. This is not unlike seeing how much milk material may be crammed through a Holstein or a Jersey in a year. Of themselves, both have little practical value beyond showing in the one case the capabilities of animals, and stimulating the mass of dairymen to better feeding, better breeding and better care. In the other what may be done with Tomatoes and all vegetables.

A Tomato vine trained on a trellis makes "an immense crop," as Mr. C.'s did; and the trellis shows how we may double the yield and improve the quality of the Tomatoes without using more land or manure. The trellise stimulates the vine to greater growth and fruitfulness; and as the fruit is kept off the ground and better exposed to sun and air, it ripens more nicely and is kept clean and bright.

When I went away from home to school I had never heard of trellising Tomato vines. The boarding house keeper into whose power I put my digestive organs, raised all the vegetables used by a dozen people on a spot 40 by 50 feet. Notwithstanding the usual slurs on boarding house tables, we had good board—plenty of vegetables. That man succeeded, not because he starved us, but because he was the best gardener on a small scale I have ever seen. He manured liberally and got four crops per season off some of the land. His Tomato vines clambered to the top of trellises ten and twelve feet high, and made such yields as I had never dreamed possible. That man showed me the capabilities of gardening, and to him I owe my subsequent interest in vegetables and small fruits.

TOOLS. There are two classes of gardeners—those who expend too much for tools and those who do not expend enough. Of course the rule is to buy all that will save in labor the amount of their cost, or make that amount through better crops; and to buy no more. But the application of the rule must be left to each individual, and therein lies all the trouble. I know three gardeners that do a respectable business that have not a wheel hoe! Now, I have always found a wheel hoe economical. I know of other gardeners that have not a horse hoe. And then how many gardeners there are whose tools are always in bad condition, dull and rusty, broken, or on the point of breaking. Let me say that the margin of profits, except to a favored few, is so small that we cannot afford to buy less or more than the number of garden tools it is economical to have; or to begin the season with dull, rusty, rotten or broken tools.

STRAIGHT ROWS. If, after firming, there is one text that is worthy of being preached on again, it is to make straight, long rows. Short rows may be a necessity sometimes, but crooked rows never. One of the very best ways to widen the margin between income and outgo is to economize labor; and one of the best ways to economize labor is to make straight, long rows. The straighter the rows the more and better work can be done by horse power. If the rows are crooked it is impossible to get as near to each plant with the cultivator or hoe as when the rows are straight; and while the work is inferior, the eyes and muscles of the laborer are taxed much more. Of course the longer the rows, less time is lost by the horse in turning, and long rows economize ground.

STRAWBERRY BLOSSOMS. One of the things not highly important to know in itself, but which ignorance of leads into many grave errors, is that the blossoms of every variety of Strawberry have both stamens and pistils. Many, however, are not perfect. In some the stamens, in others the pistils are little more than rudimentary. Some suppose that either one set or the other of organs is missing, or both are present well developed; that a variety is utterly incapable of fertilizing its own blossoms or the blossoms of another variety, or else is as capable as any other variety. The fact is that there are as many grades of capacity or incapacity as there are varieties. Of two varieties, each capable of fertilizing its own blossoms, one may have twice the pollen of the other; it will fertilize more perfectly its own blossoms, hence will produce fewer imperfect berries; and it will have more value as a sort to fertilize other varieties. I believe that the quality of the pollen has some influence, and I am fully convinced that the quantity of the pollen is of enough importance to be taken account of. In the animal world a vigorous sexual development is of much the more value in breeding; why not in the horticultural world? Aside from this, the more pollen, it is certain, the better the chances of full fertilization, the less the danger from mishaps. We get better results, usually, by using the Sucker State for fertilizing than by using any other variety. The Sucker State plant is virile, its blossoms are numerous and well developed, and furnish pollen abundantly. On the other hand, Crescent and Hovey's seedling are usually incapable of fertilizing their own blossoms, though very high culture in both has developed normal vigorous stamens.—N. Y. L.

Siberian Crab for Stock.

A. G. TUTTLE, BARABOO, WIS.

The grafting of the common Apple either on the root of the Siberian Crab or the top, has for at least 25 years been experimented with in different parts of the country and proved a complete failure.

Dr. Hoskins in the Maine report says that for 20 years trees have been sold in his neighborhood grafted on Crab roots, and he did not know of one successful orchard, and the man who now talks Crab stocks there does it at the risk of his neck. The Russian Scions from the Department sent to Minnesota were mostly top worked on Crab, and proved a failure. I top worked 10,000 trees, mostly Transcendant, with Tetofski. I do not believe there is one of the Tetofski grafts alive to-day, while the Tetofski top-worked on Duchess and grafted on the root of the common Apple are all in good condition. The Tetofski top-worked on the Crabs was done about 20 years ago and the grafts grew from four to six or seven feet, and died about the same time. I worked many kinds of the common Apple on Crabs; most of them grew a few years and died. The Walbridge made the best union and a few of the orchard trees are still alive.

Those tops worked in the Fameuse at the same time are good, healthy trees. The Walbridge is getting some stir in its favor. It has borne good crops and has come through the severe winters better than any of the American sorts.

In saving seeds from the cider mill for planting we are careful not to save any from pomace when there is any mixture of Crabs. The seeds saved from the cider mill last season were from the Duchess and other Russian Apples. Hereafter we expect to use only stocks from seeds of Russians. Not that I think it necessary in order to grow good trees to use stocks from Russian seeds, for I believe very little of the orchard killing is because of the tenderness of the common Apple stock. Give us trees that won't top-kill and we will protect the roots. Grafted on Crab roots or top worked on Crabs, the hardiest Russians top-kill.

Fruit Bleaching Again.

J. W. SMITH, M. D., FLOYD CO., IOWA.

In answer to the article favorable to bleaching evaporated fruit in the February issue I would ask. 1st. Is it a positive advantage except that the fruit is white—as white as sulphur or other decolorizing agent will make it, if you please. 2d. Do you say sulphur prevents vermin attacking it or as soon and as readily? Perhaps you do not claim this but it has that tendency, as we know.

The Chicago commission dealer referred to was looking to business, as I know they are famous for more than health. I am well acquainted with the class, and will say that what some commission dealers do not know in regard to adulteration and sophistication especially of food products is hardly worth knowing.

As a practicing physician in New York and Iowa since 1850 I trust that I am some wiser than I once was in regard to health matters. Neither have I in writing on this subject an axe of any nature to grind. I wrote the former article because I felt that the evaporating fruit people were being mislead by selfish, ignorant and perhaps unscrupulous dealers.

Within a few years past my family discovered such a change in dried fruits, Apples in particular, that we lost our former relish for the better qualities. We did not get at the cause for some time after the *white* evaporated sliced fruit appeared which the dealers described as "so nice." Finally in some specimens we plainly tasted the sulphur, and with it observed a serious loss of the God given or created natural fruit flavor.

I will not talk about sulphur as a medicine or blood purifier, etc., as the writer of that article expresses it, preferring fruit as food and sulphur as a medicine or insect or life destroyer where needed as such, and preferring to make my own selection as to manner of using sulphur or other bleaching agent that fruit evaporating men are now unwise enough to use to please wholesale commission men.

Better call a halt as soon as possible. If one man bleaches his fruit and it "takes" with the dealers and with cooks who know no better, the evil is bound to spread until something is done to check it.

The Ben Davis Apple.

Z. C. FAIRBANKS, GRAND TRAVERSE CO., MICH.

This Apple has been both as highly extolled as an Apple well could be, and most severely condemned. In one section it has been credited with one class of qualities, in other sections with the most perfect characteristic in some other respect, and as bitterly condemned for total absence of quality for which in others it has been extolled.

In this, the Grand Traverse fruit region of Michigan, it has been condemned as minus nearly every characteristic of a good Apple, except that of keeping. Very many claim that they had just as leave chew a piece of sole leather as a Ben Davis Apple, so far as the appetizing pleasure received, yet the Apple possessed excellent keeping quality. That this Apple can be barreled when picked and laid aside until the following June or July with scarcely a probability of a single decayed or specked Apple has often been claimed, but this year its characteristics in this respect have materially changed with us. Last week, finding a barrel of them in our cellar showing evidence of decay, in overhauling it we found at least $\frac{1}{8}$ either wholly decayed or commencing to decay. But there seemed to be an improvement in quality over former years. As a merchant said: It is not a bad Apple; it has not much character as an eating Apple. It is a fair cooking apple. It matured here last year. Its previous condemnation has been caused

by its seldom maturing. Our seasons are too short for it.

There has not been as wide a diversity of opinion regarding the tree as of the fruit, although in certain places it has been classed among the hardiest. Experience proves it to fall far short of it. In sections where varieties as tenacious of life as the Tetofsky, Duchess and Wealthy must be planted the Ben Davis has no business. In hardiness it compares favorably with such varieties as the Jonathan, Northern Spy, Perry Russett, English Golden Russett, Sops of Wine and Talman Sweet.

Success With Celery.

H. M. K., OREGON, WIS.

Let no one be deterred from sowing Celery for fear they cannot manage it. Last year the drought was very severe here, and yet we raised very good Celery with really not much trouble.

The seed was not sown until the weather had become comfortable outdoors, then it was sown in boxes of one foot in height, nearly filled with rich, mellow soil. The seed was covered very lightly and the boxes were kept covered with papers till germination took place, and the seedlings showed. The soil of the boxes was kept quite moist all the time. They stood in a very sunny place, on the east side of the house.

From these boxes we transplanted directly to the garden, where they were to grow. We chose a low rich spot; we did not put them in trenches, but followed mainly the directions usually given for self blanching Celery. The varieties were the White Plume and the Dwarf Golden Heart.

In the fall some of the plants were not fully matured, but we took it all up, leaving some soil on the roots, and set it in the cellar in a box, placing the roots as near together as we could. When it appeared too dry we watered it, taking care not to make it damp enough to cause mildew. Of the last we have some yet on the 17th of March.

Ways of Delaware Peach Growers.

For the first four years of the life of the orchard, says W. P. Corsa in Farm and Home, some low-growing hoed crop may be grown in it. If for the production of other crops there is used each year a fertilizer of ground bone and a moderate amount of either muriate or sulphate of potash, the trees will get enough food for healthful growth. The cost of fertilizers thus used should be returned by the crop grown and is not a legitimate charge to the Peach trees (unless someone wishing to be more accurate than the average agriculturist chooses to reckon that, as the trees occupied about one-twentieth of the space, they should be charged with their portion of the expense which has served to bring them to bearing).

The fertilizer for after years, and also the culture, should be in quantity and quality as liberal as would produce a good crop of corn, except that stable manure or compost containing a large percentage of nitrogen is not found to give the most healthful tree, though this manure will make a large growth of wood. The average cost of fertilizer per year on well-kept orchards is from $3 to $5 per acre. The ground is annually plowed early in the spring, and should be stirred with a cultivator as often as every 15 or 20 days till the weight of the fruit threatens loss from being knocked off.

The bulk of our fruit is now sold near the orchard, sometimes to evaporators, sometimes to canners, quite generally at auction to dealers gathered into an "exchange," and some is sent to commission houses in various cities.

As to the net profit, you would hardly find two men to agree. The average yield of a "full crop" on the larger trees of the upper peninsula is estimated at two baskets (five-eighths of a bushel to the basket) to the tree; on the smaller trees grown on the higher land of the middle and lower peninsula, the average is made at one basket per tree. The average price received at our depots this year was about 80c. per basket.

To tabulate, it would stand something like the following:

Average number of trees, 100, cost...	$6
Setting the same...	4
Plowing and five harrowings per year	6
Pruning per year.	3
Fertilizer...	5
Picking, 3c. per basket	3
Baskets per 100,.	5
Hauling and incidentals, an indefinite quantity.	

The chances are about as one in five that there will be a failure from frost or other cause, to get a crop in any given year.

Nitrate of Potash or Sal Nitre as a Fertilizer.

JAMES WORCESTER, MIDDLESEX CO., MASS.

I often see articles on the use of nitrate in one form or another, but never have seen nitrate of potash spoken of, and I wonder at it, as it contains two of the active principles of manure, nitrogen and potash, or nitric acid and potassa, which amounts to the same thing. I know its cost may prevent large farmers from using it, but from 7 to 8 cents per pound is not too much for small gardeners or those who have house plants.

I have used it successfully on Cabbages, Beans, Peas, Melons and Strawberries; they all grow as if they liked to. I have also used it with house plants, viz.: Geraniums, Heliotropes, Verbenas, Calendulas, Salvias, Callas, Oxalis and Ivy. They all grow well and bloom well; even the Ivy has put out leaves on its old bare stems.

The way in which I have used it is to put a large tablespoonful of the salt in a gallon of water (it will dissolve more readily in warm than in cold water), and when dissolved give the plants a good soaking once or twice in the season.

This solution will be found excellent for forcing young Cabbage and Tomato plants, or young seedlings of any kind, and I have no doubt would be more effectual with bone meal or some phosphate. I have used nitrate of potash on different kinds of soil, both here and in New Jersey, and it has been very satisfactory. I have found some difficulty in getting it, it being easier to find nitrate of soda, so I go to a wholesale druggist for it.

How a Run-Down Orchard Was Restored. A Timely Lesson.

CONDITION OF THE OLD TREES. The Michigan Agricultural College Apple orchard was set in 1858. The original plantings were mostly Northern Spy, Talman Sweet, and Seek-no-further. The soil is a strong, sandy loam, in some parts inclining to be cold and wet. In recent years the orchard had received little attention, being allowed to stand in sod. It has borne very few good crops, even from the first.

In 1885, when the control of the orchard passed into the hands of the writer, the trees presented a discouraging appearance. The previous hard winter had destroyed many of the largest trees on the lower land. There was only one Baldwin left in the orchard and but two or three Greenings and Jennettings, and all feeble. Many of them appeared to be dying. All the trees were very much stunted, there not being enough last year's wood on most of them to furnish even a few good scions. Many of the main limbs had died back from the ends and the dead portions were conspicuous in every direction. The trunks were often mossy and rough. The tops were for the most part very thick and low, so that no attempt at thorough culture could be made. Most of the orchard lay in a dense June grass turf. Several careful farmers recommended that it be cut down.

RENOVATION. The first work of renovation was to prune the trees. This was done vigorously in May, 1885. All limbs, irrespective of size, which would intefere seriously with plowing and cultivating were removed. At the same time the tops of the trees were thinned considerably, though not to such an extent as to allow the sun to beat continuously upon the main branches.

The trunks and main limbs, so far as a man could reach, were scraped, all the loose bark and "moss" being removed. This was performed solely to make the trees look better. Care was taken not to scrape into the live bark. The implements used were old, well-worn hoes with the handles cut off about two feet from the blade and held loosely in the hand, to not scrape too hard.

As soon as the pruning was accomplished and the brush removed, the ground was plowed as deeply as possible. To be sure roots were broken, but this did no harm. The ground was cultivated at intervals with the spring-tooth harrow, and in August a second plowing, in the opposite direction, was made. No crops were planted.

There was no effect produced upon the trees that year. The season's growth was well under way when the first plowing was made. The leaves continued yellow, and fell very early, as usual.

In 1886 the same treatment was repeated. Nearly as much pruning was done as before, but entirely in the tops of the trees. Care was exercised, however, not to prune the tops so thin that the large limbs would be injured by the sun. The trees early showed signs of improvement. Although the summer was dry, the growth on all the trees was good and the leaves assumed a dark, vigorous color, and remained very late upon the trees. The improvement was a subject of common remark. A fair crop of Apples, some 300 bushels, was also gathered.

RESULTS AFTER TWO YEARS. In the spring of 1887 the orchard was again plowed, deeply as always before, and the sod was removed from all the trees by hand. The tops are now so high that the plow turned over nearly all the sod. The ground was now in good heart. The trees set very full of fruit, and no pruning was attempted. Although the trees have borne a heavy crop, and the season has been one of almost unprecedented drought, the growth has been heavy. The bearing trees are 140 in number, of which less than 100—all Northern Spy—are a prolific variety and produce Apples which find a demand in market. There are a number of Sweet Romanites and others which cannot be expected to return a profitable crop. The sales for the year were as follows:

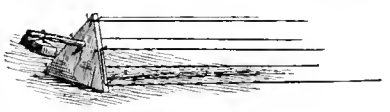
274 bbls. No. 1 (882 bu.) at $1.35.	$369.90
100 bbls. No. 2 (800 bu.) at $0.75.	75.00
60 bu. at $0.25	15.00
100 bu. at $0.30....	30.00
220 bu. made into cider at $0.20	44.00
300 bu. cider Apples at $0.05,....	15.00
1882 bu	$548.90

The reason for the great proportion of cider Apples is the heavy crop and the drought, rendering it impossible for all to mature. Thinning would probably have paid.

The crop was remarkably free from worms. Old Apple buyers declared that they had never seen so very few wormy Apples in a crop. This freedom from insects was due to sprayings of Paris green.

A WORD FOR OTHER ORCHARDS. There are hundreds of orchards which are not bearing but which could be brought into fruitfulness for a number of years by vigorous culture. There is no doubt but that judicious pruning, good tillage and liberal manuring will maintain or restore the fer-

tility of most orchards. Some orchards are now, of course, too old to rejuvenate. There may be danger in vigorous orchards of carrying the cultivation so far that nearly all the energies of the trees will be directed to the production of wood. The grower must determine the culture which shall meet his requirements. It is true that in the great majority of cases, however, the culture is inadequate. Barnyard manure, when it can be spared, is valuable for the bearing orchard. That permanent sod is an injury to the orchard is the experience of nearly every successful orchardist. Even as early as 1874 Dr. Beal found that "trees in grass made less growth, looked yellow in foliage, and



Seed Drills Protected.

bore smaller fruit and apparently less of it." In 1875 he observed that "the evidences look more and more strongly every year against the propriety of leaving trees, in our section, in grass. They have stood the severe winters no better, they have borne no better, the Apples are smaller, the trees grow more slowly, a greater proportion of trees have died than of those cultivated each year.—Report of the College Horticulturist.

Protecting Seed in the Drill.

Seeds of various kinds are liable to be disturbed by sparrows and other birds after sowing. Where gardening is done on an extensive scale, the loss may not be perceptible, but in the kitchen garden it is often otherwise. And here, the mere fact that the operations are not extended, make it easy to provide some protection against loss.

One of the best ways we know of for accomplishing this is shown in the small engraving above. This consists of having two triangular boards, one for each end of a drill, and with three or more nails driven into each of its two upper edges. A stick about one foot long, for supporting a weight, is also inserted into the board on one side, as shown in the engraving.

To use these boards one is set up at each end of a drill and having a weight, as a brick or something similar, provided. Then some light twine is passed along the drill, from board to board, back and forth and to pass over all the nails of each. This arrangement of twine will effectually keep away the birds, for they have a great aversion to any such affair. The object of the weights is to keep the twine always taut by providing against the changes by shrinking and stretching.

Cabbage Growing.

A. P. REID, SOUTH BRIDGETON, MO.

According to my experience the following are the essential points in cultivating this crop: Manure the ground highly, plow deeply, work thoroughly. As to soil, a heavy moist one is appropriate. The earliest varieties are best sown in hot-beds, and transplanted early into such soil as I have described, setting them a distance of 18 inches apart.

In planting be particular to set the plants down into the soil up to the first leaf, no matter what the length of stem. The later kinds may be properly sown in a seed bed, from the middle to the last of spring. Do not sow seed too thickly, and thin out so that they will not make too slender plants with long stumps. Shade and water are necessary generally to late sowings. Hoe often, and stir the ground deeper as the plants advance, drawing up a little earth each time, until heading begins, when they should be well dug between and hilled considerably.

When partly headed I think it advisable to lean them over on one side. To thus loosen the roots a little will sometimes avoid the bursting of full grown heads.

For insects of all kinds the best remedy is to grow and head quickly. The next best with me has been sulphur sifted on often previous to heading and during the process. I have tried many other things but this is the most effectual, though I always watch with pleasure for new remedies with a view to their unprejudiced trial. As to varieties I have found nothing for all general purposes that beats the old "Early Winningstadt." Although for extreme earliness I would recommend the Little Pixie, Early Wyman or Early Jersey Wakefield. While I make no specialty of this crop, yet these are some of my observations about it as they occur in reviewing experience and study.

Loss of Manure from Leaching.

JOSEPH HARRIS.

In reply to the washing out theory of N. Y. L., I stated in the March issue, page 117, that the underdrains on my farm were not affected by any rain that falls during the growing season. When the ground is saturated with water early in the spring, any rain which falls very soon makes a perceptible increase in the flow of water in the underdrains; but when the land once gets dry enough to work in the spring we might have a heavy rain without the underdrains showing any effect of it. "On this farm, therefore," I said, "after the land is ready to work in the spring, there is very little risk in sowing nitrate of soda. It will not leach out of the soil for the simple reason that the surface water rarely, if ever, sinks to the subsoils or underdrains." The printer left out the words "rarely, if ever," and readers must have thought I did not know what I was talking about. But I do! There has been an immense amount of talking and writing on this subject which is well calculated to mislead.

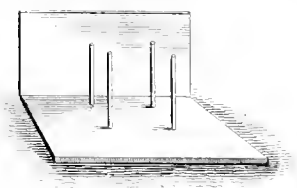
If nitrate is sown in the autumn and not taken up by the plants, much of it will be washed out of the soil during the winter and spring months. This is a well known fact, and in England and Germany, where nitrate of soda is used to an enormous extent, farmers are cautioned against using nitrate late in the autumn. Many of our agricultural writers who read these remarks in foreign journals, without stopping to think, rush into print and air their knowledge in a way that is quite amusing. It is time they wrote less and thought more.

There is so little nitrate used in this country that it need not be worth while making these remarks if the subject had not an important bearing on the general subject of manures and their application. It must not be forgotten that all nitrogeneous matter used for manure must first be converted into nitrates before the plants can take it up. And if what these writers intimate was true—if nitrates will leach out of the soil during the growing season—then we run great risk in using common manure in the early spring months. Such, as science and experience both teach us, is not the case. It is not necessary to be scattering a little manure every few weeks. Give the soil a good dressing early in the spring and it will retain it for the use of the plants.

I know that N. Y. L. can quote experiments when nitrate of soda sown on corn at several times during its growth produced a larger crop than when the same quantity was applied all at once. My answer to this is that the experiments are on too small a scale to be trustworthy. You can prove anything from them you wish.

Asparagus Bunching for Market.

The attractive appearance of Asparagus in market depends much on how the bunching is done. The bunches to look well must not only be of uniform size and length, but they should be snugly tied, points which are difficult to secure without some contrivance to hold the shoots while they are being tied. For this purpose the old buncher of Figure 1 is better than nothing. This consists of a board with four pins about six inches long and four inches apart, between which to lay the shoots, and an upright head piece for keeping the tips even. Two



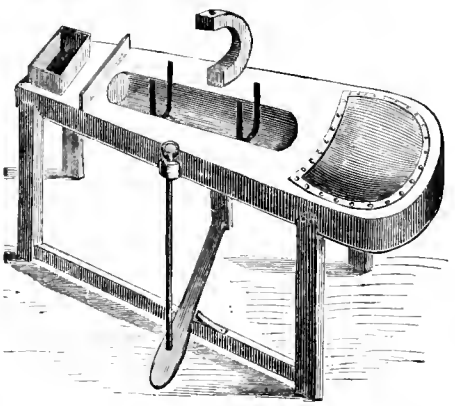
The Most Simple Form of Asparagus Bunching.

strings of bast are laid lengthwise of the board before the Asparagus is placed thereon, then when enough shoots for a bunch are in position, the strings are lightly tied and the butts are cut off squarely.

Where Asparagus is grown on a larger scale some improvement on the above device is usually employed. One of the best bunchers in use about the New York markets is shown in Figure 2. This is described by Mr. P. T. Quinn as being both simple in its construction and effective in its working. Almost any man could make one for his own use in a couple of hours.

It is two and a half feet high, three feet long, and 18 or 20 inches wide on top, having something of the appearance of a saddlers work-bench. In front of the seat is a place hollowed out, with two narrow pieces of iron hoops fastened the proper distance apart and curved so as to give the right shape to each bunch. Tying strings are laid crosswise of this mould before the Asparagus for each bunch is brought into place.

When enough shoots for a bunch are in place, the tops all being kept even against the head board, the hinged top-piece is brought over them, and the treadle loop is attached to the side-button or hook. Then with the pressure of the right foot on the treadle the bunch is compressed as much as is desired and the treadle is fastened in an iron slot. Tieing completes the work for the time being, and then the bunch is re-



An Asparagus Bunching Machine.

moved and the tieing of another follows. Just previous to sending to market the butt ends are squarely cut off.

712. **Clematis in a Grapery.** In such a situation they would not amount to anything.—C.E.P.

729. **Raspberry Picking.** For picking in I use five pound Grape baskets, without handles, strapped to the body, and pickers use two hands in picking.—OHIO GROWER.

Gleanings from the Western New York Horticultural Society's Recent Meeting.

SAVING AND USING LIQUID MANURE.—J. Woodward. Cannot afford to draw rain-water, as it does not add to quantity of manure. Prefers to draw manure to fields and spread immediately, but where unable to spread at once would compost in long flat piles, cover with some absorbent, road dust, plaster, muck, sawdust, etc., to prevent escape of gas, watering when it ferments to keep from burning. When spread as soon as drawn, all the value goes into the ground before it dries enough to be wasteful. Mr. Dunning used liquid on Foster Peach trees, after fruit was set until ripe, with gratifying success. Mr. Varney said his barnyard leaches into roadside, where he sinks a hole and uses a cask in which to draw it about the place. He did so simply because it was difficult to obtain absorbents.

Muriate of Potash was regarded by a member as the cheapest form of potash; costing four cents per pound of free potash, in wood ashes it costs five cents, while kainit is the most expensive; the bulk being salt, having no special value. Sandy soil especially requires potash. Clay may be benefited, not so much as a fertilizer as by being made mellow and friable. In the orchard application is made at the rate of one hundred and sixty pounds per acre, three or four pounds per tree. Hen manure can be mixed with plaster, or, if for Onions, with wood ashes, if gotten into the ground immediately.

PLUMS. As the six best for home use, Orleans, Reine Claude, Lombard, Shropshire Damson, German Prune were recommended. For market, Mr. Willard's choice was Reine Claude (somewhat tender), French Damson, Quackenboss, Lombard, Bradshaw, Stanton Seedling, Washington. So productive is the Richland, said Mr. Moody, that if the Curculio were doubled they could not thin them enough.

OVERPRODUCTION OF GRAPES. Fairchild, Hammondsport, believes in working up local trade; does not believe in overproduction. People are having a taste for Grapes aroused in them, thus causing increased demand. Divides his crop in different grades, which he ships separately. The sending of poor or green fruit to market does more to spoil trade than overproduction. Honesty is the best policy. Careless shippers rob themselves as well as their neighbors. Do not depend on any one variety. As a rule, large Grapes are not of best quality. Size is one reason for Concord's popularity. I think the most profitable are Concord, Delaware and Catawba. Iona, weakened from inbreeding, is more subject to phylloxera, otherwise is one of the best for any purpose. Mr. Snow, of Penn Yan, said that Concord, Delaware, Catawba, and Niagara for market have paid well. Worden is a great success, ranks with those just mentioned. Mr. Rupert, Seneca.—Present market price of Niagara no criterion as to future profits, as shown by history of other sorts. In Chautauqua County the Grape growers lose money when others than Concords are planted. Though Worden and Moore's Early will be yet further tried in the future.

Lady Washington and Jefferson usually too late for vicinity of Rochester.

BAGGING. It was decided that bagging produced better results generally, and protected from early frosts and birds.

SALWAY PEACH. Mr. Ainsley, of Geneva, the most extensive grower of this Peach, stated that his trees bore when five years old and that the last season from fifteen hundred trees his crop was three thousand bushels, and so far the fruit has matured each year without injury from frost. In quality it resembles Crawford; strong grower; does no thinning, except to remove unnecessary branches. They will keep until Thanksgiving without a cold house, and on the whole are considered profitable.

Mr. Willard said that the Early Rivers was proving itself among the best of early Peaches. Hyne's Surprise from Texas is a fine Peach, being of the same season as the Alexander, which it much resembles, but it is a free stone. Stephen's Rareripe is growing in favor, and has come to stay. Cases are known of its being shipped east and bringing $4.00 per bushel. It is a little later than the Late Crawford. The Salway ripened a wonderful crop last year, but it has a tendency to overbear. It is in good demand. The Sturtevant Peach is far superior to the Early Barnard. Mr. Willard would prefer one of them to a half dozen Early Barnard at any time. The Foster was referred to as being a fine Peach, but at Geneva it is found to be a sparse bearer.

STRAWBERRIES. W. C. Barry, Rochester.—Sharpless has proven to be best for market. Crescent of poor quality, but a great bearer. Jewell, handsome, fair quality. Belmont, better quality and stronger grower than Jewell. Could name thirty or forty new varieties that have turned out to be worthless. Mr. Hooker, Rochester.—Crescent has been the most successful. Manchester is good in many respects. Wilson where it still succeeds is still the favorite. Sharpless not satisfactory. Mr. Green, Rochester.—The Jessie has grown well, good quality, productive. Bubach is esteemed a wonderful berry, by M. Crawford, Ohio. Dunning, Auburn.—Bubach very sour, not eatable, good grower. Cumberland Triumph, good for near-by markets. Varney, North Collins, has half an acre in Crescent, and thinks that in Buffalo that sort is replacing the Wilson. Sharpless does not succeed well. Jewell amounts to nothing. Willard, Geneva, thinks Jessie promising. The Sharpless, raised at Barnesville, O., are ahead of anything ever seen. Wilson seems to be failing. Jewell nothing at all. New Dominion has done better than any other late sort.

RASPBERRIES. Barry.—The Cuthbert is a great acquisition. Marlboro, a first-class sort, the two together are the best we have. Golden Queen not fruited. Franconia, Kuevett's Giant and French are good sorts for amateurs. Hooker.—Cuthbert the most valuable sort, though in some situations is tender. Marlboro of better quality, entirely hardy, seems to do well. Brandywine, best shipper. Varney.—Cuthbert winter kills, but always has a crop. Marlboro early, but not a strong grower. Franconia, where it does well is first-class, excellent quality and profitable. Crystal, on rich, sandy soil a good grower, and hardy; yellowish tinge but poor quality. Commission men advised to let everything in color alone, except the reds. Grows his crops in matted rows. The Shaffer, in Canada, is the favorite and brings the best prices, as also does Highland Hardy, being very early. Blackcaps. Pierson of Waterloo, said that the Ohio is much better the third and fourth year from planting than earlier; productive. Tyler is very good.

GOOSEBERRIES. Mr. Dunning, Auburn.—The Industry all fell off this season. Excellent variety for amateurs. Hooker.—The Industry is the best in quality that has ever been introduced into this country, though this year the berries fell off somewhat; liable to mildew and spot; a medium grower. Downing perhaps a better market berry, though it also dropped. Willard.—So far as now known the Industry will prove a valuable sort. Attributes the dropping this year to drought. In Canada does not do well. Smith's Improved is considered better than the Downing.

ORNAMENTAL TREES. W. C. Barry mentioned six that he thought might be worthy of first place for small lawns: Japanese Rose-flowered Cherry the best weeping variety, Japanese Maple, Polymorphum atropurpureum, after becoming established in a sheltered position, is hardy and very beautiful. Cut-leaved Birch of slightly drooping habit. Magnolia speciosa, hardiest of the Chinese section and best adapted to this country. A dwarf variety of Tartarian Maple very hardy. Fern-leaved Linden, red bark of very fine habit, naturally growing into a beautiful tree.

It is a difficult matter to select trees for small lawns, and blunders in planting unsuitably large-growing trees are witnessed every day. The Kilmarnock Willow sometimes kills, and does not do well on dry ground. Mr. Barry also named six shrubs worthy of special attention: Golden Bell, very attractive, early and hardy. Forsythia Fortunei, Spirea Van Houteii, hardy and free blooming. Lilac Rouenii, a splendid variety, not very well known, color a reddish purple. Double-flowering Deutzia, Hydrangeas, Althea Double red, also in variety, and said that he was in favor of grouping single kinds of shrubs in masses by themselves, referring to Buffalo City Park as containing probably the finest examples of massive shrub grouping to be found in this country. Mr. Hooker believes that among people generally there exists a great lack of knowledge on the subject of ornamental planting. Placing the tree in the ground does not end the matter, for to enjoy the best results constant attention is required. He thought the Cut-leaf Birch desirable for small places, if, when it gets large it is replaced by a small one again. Syringa and Purple Fringe are good shrubs. Pierce, Ohio.—All the good things are not confined to the newer introductions, as the following list of older, but most desirable trees will show. Chionanthus, Japan Judas Tree, Double-flowering Thorn, Moosewood, Liquidambar, somewhat tender; Weeping Mulberry, may prove valuable; Japanese Ginko, handsome and attractive, about Cleveland is quite hardy. Various other members recommended desirable trees, including, Prunus triloba and Pissardii, very attractive. An elegant Weeping Hemlock, Laburnum will sometimes winter kill, Cut-leaf Alder. Aside from Barry's list, the shrubs mentioned were Japan Quince, Variegated-leaved Weigelia, fine, but requires much manure. Golden Spiraea, very satisfactory, bright color, and strong grower.

ROSES. Mr. Dunning's select list of seven Hybrid Perpetual Roses. M. P. Wilder, a satisfactory autumn bloomer. Baroness Rothchild, Mable Morrison, a good white, hardly so vigorous. Baron de Bon Settin, Gabriel de Louise, Anna de Diesbach, Marie Beauman, most magnificent. To form list of ten would add Louis Van Houtte, Eugenie Verdier. La France is grown through winter without much trouble, and is the best of all. Other varieties that were favorably mentioned were Gen. Jacqueminot, Persian Yellow, John Hopper.

PROFIT IN FRUIT. Mr. Moody, of Lockport, said: I think the fruit crop is far the most profitable of any crop we can raise. I know an orchard of Plums and Pears of eight acres, twenty-three years planted, which has produced over $40,000. The Kieffer is a profitable Pear; we top-grafted a couple of rows, about 200 trees, in our orchard, and last year, the fourth, we sold the fruit at about $12 per barrel. Mr. Hooker, of Rochester.—I think there are other crops which can be raised to greater profit than the fruit crop; for instance, the growing of nursery stock and vegetable gardening. Mr. Crane, of Lockport.—I have received more money from an acre of Grapes than any one can show from an acre of Apples. Mr. Watson, North Chautauqua.—This year we shipped about 300 car-loads of Grapes. We think they pay from $150 to $300 per acre on an average. One gentleman said, he can vouch for the fact that ten acres of Onions yielded him about $1,300 in one year. Mr. Rice said that in one year he had received $1,900 for the produce of nineteen acres of orchard. Mr. Willard.—This has been an off year with Apples, yet they have sold for more money than any other one crop per acre. Not twenty-five per cent of growers will cull and pack their Apples satisfactorily. A thorough reform in this respect is needed. Mr. Pearson said that Seneca Co. had received $160,000 for its fruit crop the past season.

PROGRESS IN PEAR CULTURE. BLIGHT. Hooker said that the Saunders remedy had proved very successful in checking the Pear blight. The formula was:—one peck of lime, ten pounds of sulphur, and two ounces of carbolic acid, thinned with water to the consistency of white-wash. This is applied to the tree about the first of May, and sprayed upon the foliage just after blooming. Mr. Moody.—The remedy Mr. Hooker speaks of is good. We use it, and have not lost a tree in three years out of an orchard of 10,000 trees. We use a great quantity of unleached ashes, 4,000 to 5,000 bushels a year in our Pear culture. The varieties are three-quarters Bartlett; a good many Kieffer, Duchess and Clapp's Favorite. We have not been as successful with Anjou as formerly. Kieffer has paid us better than any other, but how long it will last I cannot say. We spray every year with London Purple or Paris Green. Mr. Hoag said he never uses Paris Green, but keeps the bark clean, and cultivates them frequently, thus giving insects no harbor. Mr. Barry.—As an early winter Pear the Anjou is unequaled. To succeed that I would recommend the Winter Nelis. It is now the favorite dessert Pear for hotels. The Josephine de Malines succeeds the Nelis and these three deserve the highest praise as the leading winter Pears. The Winter Nelis is a regular heavy bearer. Lawrence is also an admirable early winter Pear and would precede the Winter Nelis. There is no danger of any over production of choice fruits. Every person should have fine Pears upon his table every day of the winter; and until this is done, fruit growers are not yet doing their duty. You can not get enough of good fruit. There is no glut of that, and no fear of there being an over-production. Plant more fruit trees but let them be of the best varieties.

COLD STORAGE HOUSES FOR FRUIT. Moody, of Lockport.—We have a large fruit house, and lately large quantities of ice have been used in it for keeping Plums, but it was a failure—fruit kept in it with ice soon decays after removal. I do not favor the use of ice for keeping fruit. A Michigan delegate condemned storage with ice entirely. He stated that this system has been well tested in Michigan.

A New Type of the Japanese Chrysanthemum.

With the widespread interest prevailing in whatever pertains to the improvement and culture of the Chrysanthemum at the present time, an introduction to our readers of the new style of this popular autumn flower shown on this page should prove interesting.

This singular variety, plainly of the Japanese section, and known as Macauley, was first sent out by an European nursery, that of Mons. Simon Delaux, last year. It was shown at the National Chrysanthemum Society's exhibition at London last autumn, and from the flowers there exhibited our engraving was made. This engraving appeared originally in the London Gardening World.

The flowers referred to are described as having been about four or five inches in diameter, rather flat-topped, and from the peculiarly crested form of the florets presented the general appearance of curled Endive of small size, and compact in the arrangement of the leaves. The florets are club-shaped, incurved, lacerated or cut at the apex in a most singular manner into a number of twisted or hooked claw-like segments. The flower-heads are massive in general appearance, and of a yellow color, heavily suffused with a bronzy tint.

It is highly desirable that the characters presented by this new Japanese variety should be preserved and extended to others of the same type, but differing in color. In other words, we would fain hope it would constitute the type of a new section that could hardly fail to be admired by lovers of this, the queen of autumn flowers: but especially by those who admire the curious and fantastic forms of the Japanese section, which is at once the most popular of the two leading types, and richest in the extent and variety of coloring. The Japanese kinds are, moreover, the least rigid or formal of these composite flower-heads, which makes them greater favorites with artists and people in general than the dense arrangements existing in other artificial productions of horticulture in this genus.

CHRYSANTHEMUM MACAULEY. A NEW TYPE.

Study the Trees.

HON. B. G. NORTHROP, CHESTER, CONN.

"What are the marks by which children can distinguish our common trees?" is the suggestive question of a teacher who wants to lead her scholars to study trees. Surely our grand trees are worthy of careful observation. One is often surprised at the ignorance of both teachers and scholars, especially in cities, in regard to the trees which are growing all around them.

Says a school official in one of our large cities—an expert in examining teachers: "I am confident that the majority of our female teachers cannot distinguish and name half a dozen of our common shade trees." A prominent professor in Yale University says: "I have lately talked with college students who could not give the names of more than three kinds of trees in New Haven." Many study books more than things, and greatly need Nature's teaching.

For Nature is the great educator. "Books are the art of man. Nature is the art of God." Books serve us best when used as helps in studying nature. Observation precedes reflection and furnishes the material for reflection. A couplet of Milton well sets forth the need of early habits of observation of all common objects:

"To know those things which about us lie
In daily life, is the prime wisdom."

Trees form fit subjects for such object lessons as will lead children in their walks, by the road-side, in the park or the woods, when at work or play, to observe and discriminate them and thus appreciate their beauty and value. Years before they can study botany, they can be led to distinguish each by such common marks as the *leaf, flower, fruit, form, bark, or grain of the wood.* I often found teachers and scholars unable to tell the kind of wood used in the floors, doors, wainscoting, window-frames, blinds, or sashes of their school-rooms, simply because their attention had never been called to such common things.

In a lesson on form, for example, the teacher may say, "On what kind of trees are the limbs horizontal, or at right angles to the trunk? None of you can answer? Then I shall not tell you. Each of you should look carefully at the trees on your way home to-night and be able to tell me to-morrow." How interesting that morrow's lesson when so many with the air and interest of explorers report what they found in the school-yard, door-yard, cemetery, road-side or nearest woods. One such fact or truth which a child discovers for himself is worth a thousand told him by the teacher, for every discovery thus made invites and facilitates future acquisitions and fosters that habit of observation which, when early formed, is of priceless value.

Similar lessons on the leaf, flowers, fruits and even the grain of the wood, with specimens in hand, favor clear perception and accurate discrimination. Of these six marks, the bark seems at first least distinctive, though to the careful observer each kind shows a distinct individualism in color, form, and in the lines, seams, or sutures. Children can easily see whether it is smooth or rough, notched or shaggy, hard or soft, thick or thin, tough or brittle.

These studies will awaken love of trees, and make youth practical arborists, so that they will want to plant and protect trees. Then they will find there is a peculiar pleasure in the parentage of trees, whether forest, fruit or ornamental.

A Talk About Lilies.

"P. P." WORCESTER CO., MASS.

For ages the Lily has been extolled as an emblem of purity, grace and beauty. That noble tribute which it received in the Sermon on the Mount has given it a renown as lasting as our race. If the varieties known in the time of the Saviour were confined, as supposed, to the candidum and Chalcedonicum, what is to be said of the "glory" of the remarkable additions made to cultivated kinds within the last fifty years. It was the introduction of the Auratum Lily that more than any other brought this class into recent prominence. Varieties now number into hundreds and the end is not yet.

The improved cultivation of the Lily is comparatively of recent date and as yet it can, as applied to all sorts, hardly be stated by rules. Dealers may tell us that they are of the easiest culture, but why then do good cultivators yet differ so widely in their opinions and ways of treatment. Some contend that the bulb flowers but once, others that it is biennial or perennial; some say plant deep, others shallow; that no manure should be used, others that there should be; and so on.

Although the writer is yet unacquainted with many varieties, he has had enough experience with kinds to find a wide difference in their characteristics, and to this fact may be attributed the contradicting ideas of different Lily growers. Dealers in their lists throw very little light on the matter of classification of the subgenera of the Lilies and the purchaser is left to make his selection as best he can. To assist the reader in this important matter we herewith present a glance at the classification of Mr. Baker, which is the best we have seen. This is based mainly on the shape of the flower and the disposition of the leaves.

LILIES WITH ERECT BELL-SHAPED FLOWERS.—ISOLIRION GROUP. *Leaves in whorls.*—Example L. Philadelphicum. *Leaves scattered*—Examples—L. butbiferum, C. Thunbergianum.

TRUMPET-SHAPED LILIES. ENLIRION GROUP. *Leaves, lanceolate sessile.* Examples—L. longiflorum, L. Philippense, L. canes. Scattered. Examples—L. Japonicum, L. Kramerii, L. candidum, L. Brownii. *Leaves in whorls.* Example—L. Washingtonianum.

TURK'S CAP LILIES. MARTAGON GROUP. *Leaves in whorls* Examples—American species, L. Canadense, L. pardalinum, L. superbum, L. umbellatum. Old World species—L. Martagon, L. Hansonii. *Leaves scattered, lanceolate, many nerved.* Examples—L. monadelphum, L. ponticum, L. carniolicum. *Leaves narrowly linear, few leaves.* Example—L. testaceum, L. Leichtlinii, L. pomponium, L. chaleedonicum, L. tennifolium.

GOLDEN-RAYED AND TIGER LILIES. ARCHÆLIRION GROUP, *Leaves short stalked.* Example—L. speciosum, L. auratum.

The foregoing are some of the principal types of each class, except the L. Thompsonianum, which appears to be distinct from all others, having a coated bulb like the Fritillaria.

Though some Lilies in the wild state may be found growing in swamps and muck, it does not follow that they should be grown in like situation in cultivation. A place free from standing water, but moist, with partial shade in the heat of the day, appears to be the best, with mulching and watering in dry weather.

Many failures have undoubtedly been experienced in Lily culture from two common

causes, namely: the weakening of the bulbs by keeping them too long out of the ground, and the starting of the flower stalk before the roots have developed sufficiently to support it. The bulb when received from the dealer is a mass of scales in which the future stalk and flower are stored. But its vital sources of life and growth have been diminished by exposure very likely so that in its new home, however favorable, its wasted strength is put to a double tax. While the stalk, which is the first to feel the quickening influence of heat and moisture, may push forth, feeding on the partly depleted food laid up the year before, root development may be largely lacking and a sickly plant is the result.

In such a light, spring planting is to be avoided unless the roots can be had intact; while fall planting, as soon after the bulbs have ripened off as possible, so that the roots can commence growth during the resting period, is desirable. Lily roots it should be remembered are always at work when undisturbed storing material for future use.

When once sound Lily bulbs are established they require but little care beyond keeping them free from weeds and a heavy mulching of old manure and other coarse material before the ground freezes. Overfeeding must be guarded against, especially with the class the top of which is annual, and which includes most if not all our natives. Excessive growth of stalk and flowers is to be avoided, for this so exhausts the bulb that no new bulb for the next year is formed, and hence growth must cease.

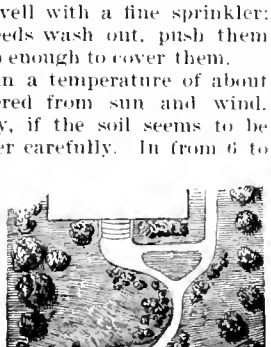
Successful Pansy Growing.

EPHRAIM PRESTON, BERKS CO., PA.

The following plan of growing Pansies without the aid of glass may be practiced where the air and soil are very dry, and where usually the plants are killed by the red spider in July.

Procure good seed from some one who makes a specialty of Pansies. The latter part of May sow the seed in a box of leaf or other light mold that has been sifted through a sieve having $\frac{1}{4}$ inch mesh. For a package of 100 seeds the box should be 4 inches deep, and 8x12 inches inside. The soil should at sowing time be moist but not sticky. Fill the box within $\frac{1}{2}$ inch of the top, make the soil moderately firm by shaking, level it with a smooth block, sow the seed evenly broadcast, cover with $\frac{1}{4}$ inch of fine soil, water well with a fine sprinkler; if any of the seeds wash out, push them into the soil deep enough to cover them.

Keep the box in a temperature of about 60 degrees, covered from sun and wind. Watch it closely, if the soil seems to be getting dry water carefully. In from 6 to 15 days the young plants will begin to come up, when they should be uncovered and set in a bright light, but protected from the wind and midday sun. An east porch is a suitable place.



Laying out a Steep Front Yard
See Reply 682 on page 181

In about a month from germination, when the plants have two to four rough leaves, transplant to boxes that are 4 or 5 inches deep, setting the plants 3 inches apart, give them a good watering and set them in the shade for a few days, then put them in a position where they will not be exposed to the wind and noon sun. Watch for and keep down any insects.

Early in August prepare a bed for the plants with an eastern exposure, if possible, or where they will not have the sun all day. The bed should not be shaded overhead, nor exposed to the prevailing winds a bed where spring bulbs, or early annuals, or perennials have done blooming, or the old Pansy bed, will do for them. Dig in 2 inches of old cow-manure, and some bone dust with the soil.

About the middle of August set the plants in the bed 9 inches apart, choose a cool or moist time to move them, water the plants in the boxes before lifting, move with a trowel, taking the ball of roots that belong to each. Make the soil moderately firm around the plants. If the ground is dry, make a hole 3 or 4 inches from each plant after setting and give each a pint of water, afterwards leveling up with dry soil.

When moving plants trim off all sickly and dead leaves and destroy all insects. Never let Pansies seed if you want an abundance of flowers.

When the ground freezes cover with leaves enough to hide the ground, then put on Red Cedar or Juniper boughs to entirely hide the bed and keep out the sun.

When the frost is out in spring take off the leaves and boughs, and if there is danger of freezing again, put some of the boughs back till the weather is settled. Water the bed when dry, using a gallon per sq. foot.

Summer Bedding; with Designs.

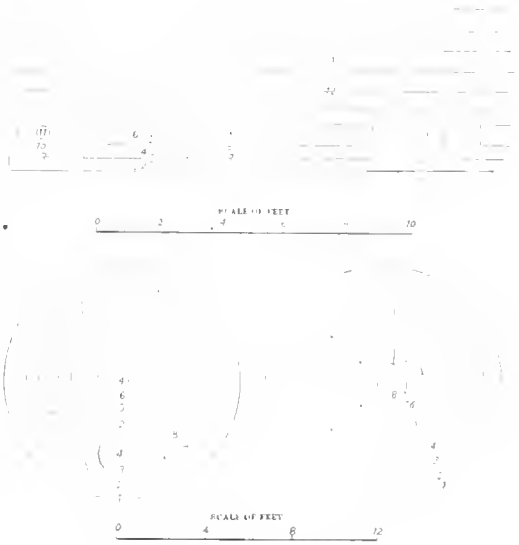
An excessive use of the tender bedding plants to the exclusion of other classes of embellishing material for the flower garden is certainly not to be encouraged. At the same time let us not fall into the error of some who would utterly banish the carpet style of bedding from our lawns and gardens. The fact is we are very kindly disposed towards this method of adornment when practiced in moderation, for to our mind it has done more to foster a love of flowers and gardening amongst all classes than any other style ever in vogue. It has lead to an increase of greenhouses, amounting perhaps to fifty fold in a score of years, and correspondingly has attracted thousands of people in town and country to engage in open-air gardening, who, but for this, more likely than not, would never have taken to the health-giving art.

But while advocating summer bedding in a fair measure, let us also urge that it be not overdone. The enthusiasm which it has inspired among flower growers no doubt has often lead to extremes, which have in their time tended to create a distaste for the style with some. Where a single flower bed of good design, and well planted and maintained, may prove to be a pleasing object in many a place, still if there were a number of such the effect would not be likely to be satisfactory in like degree. Let but the principle of keeping fine productions in this line decidedly subordinate in size and importance as compared with the surroundings of lawn, groups of hardy plants, shrubs, etc. be observed, and there will be very little danger of overdoing in the use of such. Another argument in favor of moderation in this line is the cost of the tender one-season material that is used in planting.

To aid those who desire to employ some simple, yet pleasing designs for plant bedding, the accompanying patterns of beds we have met are given. A scale of feet is appended to each of the two styles to aid in laying out and planting the beds.

The left-hand circular plan represents a bed, planted as follows, the figures referring to the engraving: 1. Sloping edge of Echeveria secunda glauca. 2. Ground work of Othonna sedifolia. 3. Edge of Mesembryanthemum cordifolium variegatum, and filled in with blue Ageratum. 4. Dracæna Australis liniata. 5. Golden-feather Pyrethrum. 6. Scarlet and Rose-colored Geraniums, mixed. 7. Alternanthera parychoides major. 8. Pink Geraniums.

The circular bed represented by the right-hand lower figure was planted as follows: 1. Edging of Variegated Thyme. 2. Band of Alternanthera amabilis. 3. Ground work of Mesembryanthemum cordifolium variegatum. 4. Edging of Coleus Verschaffelti. 5. Line of Centaurea gymnocarpa. 6 and 7. Dark and light Coleus. 8. Scarlet Geranium, dark Canna in center.



DESIGNS FOR CIRCULAR AND ELONGATED SUMMER BEDS.

The upper horizontal figure represents a section of an elongated border, and planted as follows: 1. Echeveria secunda glauca. 2. Ground work of Othonna sedifolia. 3. Echeveria secunda glauca. 4. Alternanthera aurea nana. 5. Variegated Thyme. 6. Echeveria metallica, alternating in other beds with Echeveria glauca metallica. 7. Variegated Alyssum. 8. Alternanthera parychoides major. 9. Dracæna terminalis. 10. Alternanthera amabilis. 11. Dracæna indivisa. 12. Golden-feather Pyrethrum. 13. Dwarf blue Ageratum. 14. Achyranthes crimson. 15. Centaurea Candida. 16. Coleus Verschaffelti. 17. Scarlet Geraniums.

657. **Ailing Begonia.** Some trouble with the roots. Probably most of them have rotted. This may be due to overwatering. Secure and strike some cuttings, and in this way get up a fresh lot of plants. Diseased Begonias of any sort are mighty poor stock to have.—W. F.

688. **Sowing Strawberry Seed.** One of our leading originators of new Strawberries gives this as his method: I sometimes sow the same season that I gather the seed, putting it in about July 1, but prefer to keep it until the next spring. The seed will germinate without frosting. I use eight-inch pots filled with clean, sharp sand, sow the seed from one berry, press it in with the bottom of another pot, water with fine hose, sink the pot in soil in a frame, cover with sash, then shade with lath. By keeping the sand damp, in twelve days the plants will appear. When the leaves are the size of the thumb-nail, they are ready for the open ground. The land is prepared the same as I would for the regular field crop. I turn the plants out of the pots, and am careful that the roots do not get dried. I have every fibre of root, so lose no plants. I hoe about every ten days. I allow but one runner to each plant to root, and this in the row. At the end of the season every plant will be strong and bear a full crop the next season. I cover with straw for winter protection. When fruiting I go through the rows every day and write my conclusions on stakes put in the ground close to the fruit. I repeat this daily until the season is over, usually finding about eight per cent extra promising. From these I raise from ten to twenty plants of each. I then prepare a piece of ground long and narrow, set seven plants in a row of each variety, giving each a name.

Decoration Day Ode.

Play the peace bugles low,
And the white Roses blow,
And the Apple-blooms fill
The green valleys with snow;
Let our sweet songs arise
On the spring's western wind,
We can never forget them
Who died for mankind.

Set the flag on their graves,
In the Lilies enshrined,
We can never forget them
Who died for mankind.

Set the flag on their graves,
Where the vernal wind laves,
The Roses of peace,
From the spring's western waves.
'Twas for you and for me
Their grand lives they resigned;
They are brothers to all men
Who died for mankind.

Set the flag on their graves
In the Lilies enshrined,
Let us never forget them
Who died for mankind.

—*Youth's Companion.*

Tulips.

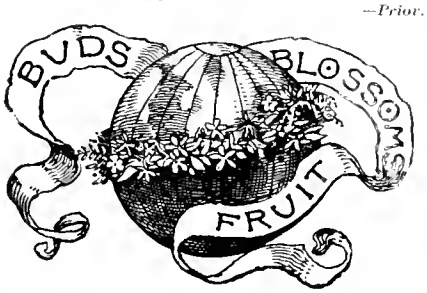
Around the beds of the garden,
In the earliest summer days,
Like a fairy torchlight procession,
March the Tulips, all ablaze.

The beautiful fiery Tulips!
Did you ever pull one apart
And see, neath the flame of the blossom,
How the cinders lie at its heart?

—*Bessie Chandler in Wide Awake.*

Why does one climate and one soil endue
The blushing Poppy with a crimson hue,
Yet leave the Lily pale, and tinge the Violet blue?

—*Prior.*



Yuccas should be more grown.

No Roses grow wild in the tropics.

A mossy lawn indicates a poor soil.

On heavy soils sow Carrots on ridges.

The smaller the weed the easier killed.

For "club root" shift the Cabbage plot.

By sowing thickly you must thin quickly.

Roses look finer when arranged in groups.

The oleanest culture ensures the best returns.

In ornamental work it is well not to try for too much.

Dumpiness in Hyacinths is a defect of the bulb rather than of culture.

Many have sent us one or more new subscribers recently. Have you?

In Chrysanthemum culture aim to secure a steady course of growth.

Asparagus should not be so much a luxury; let it be a common vegetable.

If you think of setting a young tree in a spot long occupied by an old one we say don't.

Cut short the plant flea's career, by poisoning with Paris green mixed with flour or plaster.

Isolation of the different varieties of Squashes, Melons, etc., is the price of securing such in their purity.

If the loam for Chrysanthemums is inclined to be heavy no better ingredient can be added than some crushed charcoal.

As the delights of the garden increase week by week now, you should find it easy to secure one or more subscribers to this journal.

Clematises Dying Off. The cause of this common complaint is often to be attributed to over-watering the plants, especially of such as have not yet become well established.

The good old custom of having parts of the kitchen garden assigned to flowers is a most pleasing one, and helpful to the making and keeping of the vegetable plots more attractive.

Fruit Prospects in Illinois. The Peach crop promises to be larger than was expected. Trees are just beginning to bloom. Other fruits look well in general.—*Wm. Jackson, Madison Co., Ill.*

The Fern Garden. Against the writer's house on the shady side is a most satisfactory bit of Fern gardening, and all the more so in view of the fact that nothing else would thrive well there.

To the Women of America. Get out-of-doors more this summer. Let the garden be the inducement. Spend some time here every day and POPULAR GARDENING AND FRUIT GROWING will guarantee an awful appetite by fall.

It's the Same With Other Fruits. To the statement made to a market grower that the aristocracy got the best of everything, the reply came, "Well, they don't always, for when I handle fruit and come across luscious specimens too ripe for carrying they go to my own family."

Drawbacks in Plum Culture The veteran J. J. Thomas sums these up as follows: 1. Checking the growth by neglected culture. 2. Allow the curculio to have the free run of the orchards. 3. Neglecting the black knot. 4. Leaf blight from a want of manuring and good culture.

A Jam Delusion. A Boston man who makes Raspberry Jam for a living is authority for the statement that "we don't use any Raspberries at all in making the jam." What "we" do use, it appears, are Tomatoes, and glucose and hay seed and a "little prepared Raspberry flavor."

Ashes around Peach Trees. I have a good mulch of coal ashes around all my Peach trees, and am satisfied that a thriftier and heavier growth is secured than if left away. I tried the plan on a few trees at first and now have all the trees mulched in this way.—*N. J. Shepherd.*

Root Pruning. To prepare an Oak or Black Walnut that has reached some size, for transplanting successfully a year later, let it be pruned this month by digging down and severing the tap root, and then cutting a half circle with a sharp spade about two feet away on one side of the tree to be followed by a repetition of this on the other side a month later.

The Japanese Hop. I saw last summer a rustic arbor covered with this elegant plant, (*Humulus*) and the growth was so dense that nothing could be seen through it, proof indeed against a sharp shower of rain. Amateurs who have only a small plot to indulge their taste for gardening should make a note of it, as it is only necessary to sow the seed and wait for the results.—*E. C.*

Moss as a Substitute for Pots. "If you have no pots for your bedding plants," writes "Young Beginner," "make a pad of moss about the size of a plate, cover it with a layer of good soil, bring the sides up around the ball of earth, after having placed this in the center, and tie tightly together with raffa or old mat. In this shape the plants will continue to thrive for weeks, having all the benefits of a shift."

Insects on Plants. I have never tried anything that would so successfully destroy insect pests as wetting the plants by sprinkling with, or dipping in water, in which Tobacco leaves have been steeped. One can grow their own Tobacco, which, when dried and stored away, is always handy, and of not over-much trouble. Have tried it for Aphis, Red Spider, and Scale. Of course, one must watch and repeat it if after a time they reappear.—*I. C. E.*

Commercial Fertilizers for Potatoes. My plan of applying is to mark out the rows, running the furrows reasonably deep, apply the fertilizers in the bottom of the furrow, working well into the soil and then planting the Potatoes on this and then cover. I tried several plans and have concluded that this is the best plan, as it places the fertilizer where it can be made available. I never like to place fertilizers or manures of any kind in direct contact with the seed.—*N. J. Shepherd.*

Old tin cans are in some respects better than pots for plants. They are not so heavy, do not take so much room as a pot that would hold the same amount of soil; will not break if they fall. Bulbs seem to do really better in them than in pots. I have a dwarf Ageratum in a can that holds one quart, and it has bloomed all winter and has afforded us many cut flowers. The cans can be painted easily, and if they are rusty the paint will stick to them all the better.—*H. M. K.*

Nutrition of Mushrooms. As to the comparative value of Mushrooms and meat Mr. E. F. Ladd, of the New York Agricultural Experiment Station, as a result of careful investigation finds that Mushrooms (*Agaricus campestris*) gathered from a pasture at Geneva, N. Y., contained 84½ per cent of digestible albuminoids, and Puff Balls (*Lycoperdon gigantens*) from 70 to 80 per cent, according to maturity. He concludes that they compare favorably in nutritive value with meat.

Marking the Spot. Formerly when I sowed flower seeds in the border it bothered me to know the exact location of each kind previous to the time of coming up. Hence in the busy garden-making time, they were often disturbed. Now I adopt a plan which prevents such a misfortune. It is simply to encircle the spot temporarily with a ring of stones. I not only do this to the spring sowings but find such a plan of marking quite as desirable when seeds of perennials later on are sown.—*Subscriber.*

Poisoning Mice in the Garden. I see one correspondent advises soaking Peas in water, and after swelling soaking in arsenic and burying beneath the surface. For mice I think my way is better. I mix finely ground Indian meal with a good portion of strychnine, and put little mounds of this where they run. It catches them invariably. It is successful in hot-beds too, and why should not it be successful on a Mushroom bed? The mice do not get far away before they fall dead, and then cremation.

They are Fully Appreciated We refer to the many kind words testifying to the value of this journal received at this office from readers. Such are indeed most gratifying. More than that, they serve to spur us on in our endeavors to make this the most useful and handsome paper in the world devoted to horticulture. But for the crowd of useful matter constantly on hand to be printed it would afford us much pleasure to publish some of these. Then again they are so numerous that the question would at once arise of where to begin publishing and where to leave off.

Vegetable Plants for Ornament. In my conservatory it is now summer. A nice red Chili Pepper plant is growing in a quart can, and from it hangs a beautiful ripe pepper looking like a piece of coral; there are a number of green peppers and blossoms, so that it makes quite an attractive plant. It was a small plant last fall, and has had a place on the upper shelf all winter. I have kept several Parsley plants in quart oyster cans; they have supplied us with all we have wanted for garnishing and for soups all winter. I have also kept Thyme, Lettuce and Nasturtium in the same way.—*Wisconsin Amateur.*

Liquid Manure for Roses. Would you have fine hardy Roses? Then we counsel the free application of liquid manure to the plants for one month previous to the opening of the buds, beginning in the North about the middle of May. Start in by using a liquid consisting of a barrel of water into which three heaping shovelfuls of cow droppings have been stirred, leaving it to stand 24 hours before applying. After a week or more the strength may be increased somewhat. Apply by soaking the ground about the bushes twice a week. This wash, it is believed, also kills the larva of the Rose bug while it is in the ground.

A Fine White Flowering Spiræa. Van Houtte's Spirea (illustrated opposite) is the most showy of all the Spiræas, and one of the very best flowering shrubs in cultivation. The plant is a rather tall, upright grower, with long, slender branches that droop gracefully with their weight of foliage and flowers. Foliage curiously lobed and rounded, of a lively green color. Flowers pure white, great clusters and whorls, forming cylindrical plumes two to three feet long. The cut is from a photograph last spring of a specimen growing on my grounds when in full bloom. The plant was then a "perfect snowbank of white flowers." Few plants present a more charming appearance when in blossom, or are more tasteful at other times. This is one of the hardiest of all the Spiræas.—*W. S. Little.*

Marking with Stones.

Henderson's "New Gardening for Pleasure." What Mr. Peter Henderson's standard works, "Gardening for Profit" and "Practical Floriculture," have done and are doing for the market gardener and florist, this enlarged edition of a former excellent work, by the same author, is designed to do for amateur cultivators. It covers the three departments of flower, fruit and vegetable growing, with the part devoted to the first named rather more extended than the others together. Like all of Mr. Hendrson's

works this one is marked by a clear and practical style, which at once incites enthusiasm in the mind of the reader, and leads him who in practice closely follows the directions, to a reasonable measure of success, inexperienced though he be. The work is profusely illustrated and contains over 400 pages. From the press of O. Judd Co., New York.

Grafting the Grape. Chas. A. Green says that the best time is in May or early June, after the buds of the stock have opened, while the scions have been retarded in a cold cellar. With young stock his method has been to splice-graft the same as with the Apple, but with old vines he cuts off the old cane as close to the roots as possible, often six inches below the surface. He then uses a Wagner saw, which makes a smooth clean cut in the stock, into which are fitted Grape cuttings, three or more into each, the cut being slanting the scions extend some inches below, as well as above the surface of the soil, which is leveled so that the top bud is seen. The scions are made to fit the gap made with the saw by cutting a little from each side, slightly wedge-shaped, pressing moderately firm in position, covering with earth only, and using no wax or ligature. The application of wax will be fatal.

The Best Silver-Edged Geranium. All things considered, I think Mad. Solleroi is the one. I have found its management easy in the last degree. Slips of it strike readily at any time, and under almost any circumstances, when those of other fancy-leaved sorts, and even common Zonale ones, refused under the same conditions; some that I timed were ready to pot off in four days from the time I put them in the sand in a warm kitchen window. When I got mine two years ago I felt rather doubtful of success, the plant was so small, and had such a delicate appearance in general, but it soon convinced me that it was here to stay, and though it is many times larger than it was then, it is quite as dainty and attractive. It is true mine never blossomed, but one can well overlook the absence of bloom when it has so many other good points. Last and best, I can recommend it, because though every one who sees it will be sure to want a slip of it, it will not "slip away" as some plants do, but for every slip taken half a dozen more will soon come to take its place.—*Elder's Wife.*

Cultivating Native Lilies. The native Lily of this section is L. Columbianum, bright yellow with few spots, size and shape like Canadense. In the open ground it grows but little over two feet in height and with one to six flowers; while one in my garden last summer was six feet high with thirty flowers. The individual flowers do not improve in any way. I have two white native Lilies which differ certainly as much as Canadense and Columbianum, but I am told by local botanists that both are varieties of L. Washingtonianum. One from Oregon has flowers shaped like candidum, of good size and firm texture, very glossy, specked with small dark dots. One from California is similar in shape, the petals longer but much narrower, especially at base, unspotted, but having a bright green line from the base of each half way to the tip. Both turn pink in withering. The Oregon is much the finer Lily, and stronger in growth. Lilies will usually live if taken up when in bloom, but sometimes require years to recover to a blooming stage. It is better to mark and move in the fall when the top dies.—*Mrs. F. E. Briggs, La Centre, Wash. Ter.*

The Watering Pot in Other Lands. All the world over where any attempt is made at gardening, remarks Gardening Illustrated, there you find the watering pot in some form. In Egypt a bag of skin does duty for it, the water being spurted through a narrow hose-like portion. The old earthenware water-pot is now rather rare in France, but it is often shown in the Salon pictures of flowers and plants. In Borneo a hollow bamboo does duty as a water pot, and there are different appliances elsewhere, but for persistent use of this appliance the Chinese are especially noted. A Chinaman seems to employ every spare moment in watering his garden. Early and late, rain or shine, it makes no matter—there he is at work with the water-pot; and it is rather amusing to see him stolidly pouring water about among his vegetables during a downpour of tropical rain. One fact is in his favor, for whenever the Chinese take to growing vegetables they beat all comers, and generally monopolise the trade. This season, in particular, we have been driven to the use of the water-pot more than usual. In watering permanent plants our plan is to scrape away the dry soil before watering and to replace it afterwards, so that it to a great extent prevents evaporation, and also caking on the surface. In transplanting during hot weather we also are very particular to water the plants a day or so before they are moved as well as afterwards. When well watered before digging, we find it easy to transplant nearly anything without any injury whatever.

SPIREA VAN HOUTTEI. A PLANT FOUR YEARS FROM THE CUTTING BED.

Pots and Plant Tubs. There is nothing better or handier than the common flower pot. We have all sizes from 2 inches to 14 or more inches in diameter. Some growers like soft pots, but I prefer them pretty well burned, that is, hard pots, but not so hard as to be unshapely. In the case of plants needing pots over 12 inches in diameter I prefer to use tubs. I never get tubs made a-purpose, but I go to the grocery store and get liquor barrels, gasoline barrels, butter firkins, or anything else of that kind that is made of hard wood and has iron hoops. Each barrel, when cut in two, yields two good tubs. With hot water and soda or a fire of shavings we are able to clean most all barrels well enough to render them agreeable to the roots of plants. And before using we screw on to the sides of each tub a pair of stout iron handles, for future convenience in moving the plants. Several auger-holes are also bored in the bottom of each tub for drainage. Tin cans as old lobster, Tomato, baking powder, and other cans—are often used as pots, so too are broken basins, jam pots, old tea pots, and the like, and all are good enough in their way, providing they have a large hole at the bottom for drainage. But no matter what is used pot, tub or tin can—it should be perfectly clean inside and out, but more especially inside, before the plants are potted; and they should also be perfectly dry at potting time. If pots that are dirty inside or wet are used the plants later on can never be turned out of these without tearing their outer roots.—*W. Falconer.*

New York City Fancies in Flowers.

Everyone is looking for new ideas in flowers since Easter, but truth to tell, you don't see many of them,—except in the newspapers. Lent has not really been a dull season; there were two very grand balls, as well as minor entertainments, and even an informal breakfast party must show floral adornments now.

Plants predominated in Easter decorations, and there is every indication that their use will continue to increase.

Old Trinity Church was not quite so elaborately arranged as in former years; the decorations were all within the chancel, and consisted chiefly of Lilies, Azaleas and Hydrangeas. In very few cases were designs used in the churches. St. Patrick's Cathedral was lavishly adorned with Palms, Hydrangeas, and other flowering plants, while some of the Presbyterian Churches made rather a new departure by being even more elaborately decorated than their Anglican and Roman Catholic neighbors. A great many pot plants were sold, and used in place of bouquets or baskets as gifts. In fact, there were astonishingly few baskets or designs made up. Boxes of choice flowers, ranging from five to ten dollars each, were much in demand. Occasionally there was a call for ornamental boxes filled with flowers, but in most cases people prefer the plain pasteboard—they buy the flowers, not the box.

There were some notable weddings during April. In one case, where the bride bore the dainty name of Daisy, the entire house was decorated with masses of Daisies; no other flowers were introduced; the effect was most charming. In most home weddings the arch takes precedence of a canopy.

The beautiful style inaugurated at Chief Justice Waite's funeral, of decorating the family pew with flowers, has not yet been followed here, but it is looked upon with favor. In this case, Callas and trailing green draperies were used along the back and sides of the pew. The customs of decorating the church with flowers and plants on the occasion of a funeral is increasing in favor; it is much more tasteful than a lot of meaningless designs. A floral pall, completely covering the casket, is usually made of Ivy leaves, fastened on a canvas foundation. An artistic cluster of flowers may be put at the head, or irregular, loose bunches are dotted about it. A plaque of flowers completely covering the top of the casket is another much admired idea. It is straight at the sides, either rectangular or rounded at the corners, but does not minutely follow the lines of the casket, since it is desired to remove the coffin-look. It is made on a wire frame. One of these plaques was made entirely of Lily of the Valley, with a few White Roses here and there. Lily of the Valley is in equal demand for both funeral and wedding work. The Easter brides all carried this flower. The little maids of honor, at one of these weddings, carried big white straw hats filled with pink Roses; these flowers are much affected by bridesmaids at present.

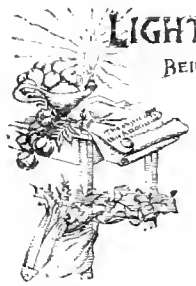
Long-stemmed Hybrid Roses are most favored for dinner decorations. A flat basket is filled with Ferns, and the Roses are carelessly stuck in among the Ferns. When the dinner is over these flowers are taken out and presented as souvenirs. It is an economical practice, while giving a thoroughly good effect. In some cases, where smaller flowers are used, they are loosely bunched, and then put into the basket, so that they can be distributed like the single flowers. But all flowers for this use must have very long stems, and they must not be wired.

Masses of Bougainvillea are to be seen in the florists' windows, but though this can be used in large decorations it has to be handled very carefully, as its odd purplish pink kills other colors. For this reason it can only be used to a limited extent on the table.

Genista—Plant-a-genet is always used quite largely at this season, both cut and on the plant. It is combined with pale yellow Tulips and Jonquils. These yellow flowers are admired with Mignonette; the combination is very spring-like, and consequently in season.

One handsome basket seen recently had a tripod support about four feet high. On this were three cornucopia-shaped baskets, one beneath the two others, which were equal in height. The lower one was filled with purple Violets and Bride Roses just beneath it was a small sash of Violet ribbon. The two upper baskets were filled with Beauty Roses and Lilac, the whole being draped with Adiantum. The whole effect was charming.

EMILY LOUISE TAPLIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Grape Buds. A mature vine should have from 40 to 45 buds left at each pruning. The number of canes there are on is immaterial. *Mr. Skinner of Chautauqua County, N. Y.*

The Children's Plat. In our arrangement of the garden this year let us not forget the children, give them a corner for their very own, guiding the management, but allowing full scope for their taste and judgment.—*C. W. Garfield.*

The Glass Area. Mr. Thorpe estimates that there are three hundred and thirty acres of ground covered with glass in this country, about one-half of which is devoted to the growing of plants and one-half to the production of cut flowers. There are probably not less than fifteen thousand individuals engaged in growing plants (for sale or for cut flowers), and employed in florists stores in the cities.

Be Fair With Your Trees. One speaker at a meeting of the Illinois State Horticultural Society in accounting for the failure of the average Illinois orchard, in addition to planting unsuitable varieties, said that if we were to draw a life-like picture of one, it would be in a wheat field, and in a year or two seeded down to Timothy, and mown, or used as a pasture. An orchard so treated could not thrive any better than a Corn field in a meadow.

Failure of Russian Apples. Many of the Russians fail. They have sadly disappointed their friends, as they have blighted badly, failed to withstand the alternate heat and cold of our winters, and the rain and sunshine of our summers. It is this alternation which kills, and not the extreme and steady cold of their native country. We in Illinois expect better success from the Apples of the Southern States, Kentucky and Arkansas.—*Mr. Dunlap.*

Grapes all Winter. While in Platteville, Wisconsin, in January, I had the pleasure of eating Catawba, Diana, Salem, Agawam and Tokaloo Grapes as fresh as if they had just been gathered. I found upon inquiry that the family used Grapes in winter as freely as Apples and that the method of preserving them was to place when dry, after careful selection, in earthen jars and seal with grafting wax, keeping in a cool place until used. *Sec. Garfield, before the Michigan State Society.*

A Cheap Manure. When I was raising Potatoes I tried making the manure myself to get it cheap. I took meadow muck and thirty per cent of sulphuric acid and forty per cent of phosphates and a bushel of ground bone. I tried planting Potatoes on that. It only cost me two or three dollars a cord, work and all. I believe any one who has plenty of meadow muck can make manure in that way at less price than they can on barnyard manure. I am very much in favor of commercial fertilizers and barnyard manure to help out to fertilize the lands. I consider investments in fertilizers excellent.—*Mr. Lyke, before the Mass. Flowman Association.*

Manure for Strawberries. The best plant food for Strawberries is grain-fed horse manure, composted and fermented. Hen manure, properly reduced and fined down is excellent. Fish, composted with earth and fermented is valuable. Ashes mixed with ground bone is also valuable. The best form in which we can apply potash to the soil is in the form of good unleached wood ashes. The German potash salts are quite advisable, but chemical fertilizers must be used with caution. These special fertilizers are valuable to supplement other manures, but we must not depend upon them to take their places. Have a good barn with cemented tie-ups for obtaining the liquid voidings of the cattle, use plenty of absorbents, and it will be found the very best manure for all the small fruits. *P. M. Augur, before the Maine Pomological Society.*

Tarring Trellise Posts. In answer to the query "Does it pay to tar posts," the following responses come from members of the Chautauqua County (N. Y.) Horticultural Society: Mr. Skinner. One well tarred post is worth two untarred. I had some posts tarred six years ago which were boiled in tar for six hours. They are sound today, but posts tarred poorly two years ago are rotting fast. The thin coating of tar lets the moisture in between itself and the post and the post decays faster than if the tar were not present. But if the posts are boiled until the tar has penetrated the timber the effect is very beneficial. I use gas tar. Mr. Ryckman. I think oil tar better. It is obtained from the refining of kerosene oil. Schoenfeld. The greener the posts are the farther the tar will penetrate. I know it. Ryckman. Can't agree with that. I think tar will penetrate much farther in seasoned timber. It is no benefit to tar a green post.

Some Worthy Pears. At the very last Exhibition Mr. Lovell attended, he concurred in the opinion that, of all Pears of foreign origin and recent introduction, Ansault is easily the best. It would appear designed to supply the place of Belle Lucrative; manifesting the same extreme fecundity with similar juiciness and a much higher flavor. Its season endures for weeks and, taken all in all, it is a decided acquisition. As much may be alleged of Dr. Reeder—an old acquaintance, whose surpassing excellence was especially evident this last Autumn. And it may be appropriate here, and in this connection, to repeat the hope that Earle's Bergamot will be disseminated more widely. This local novelty commended itself to critical judges, in 1887, as never before. As the one Pear of pre-eminent high quality, "Native here, and to the manner born," it merits peculiar encouragement.—*Secretary Lincoln, of the Worcester (Mass.) Society.*

Rose Forcing. Most growers now limit themselves to a few varieties, and the best success is attained where each variety has a separate house. The number of varieties of Roses which may be considered as staple is about twenty-five, as follows: Bon Silene, Safrano, Isabella Sprunt, Niphetos, Perle des Jardins, Sunset, Papa Gontier, Souvenir d' un Ami, Mme. Consin, Souvenir de Malmaison, Marechal Niel, Cornelia Cook, William Francis Bennett, Pierre Guillot, Bride, Catharine Mermet, American Beauty, Gen. Jacqueminot, La France, Baroness Rothschild, Mme. Gabriel Luizet, Magna Charta, Anna de Diesbach, and Duke of Connaught. Other varieties which are grown for the market, but less generally, are Douglas, Duchess of Edinburgh, Yellow Tea, Royal Tea, Lamarque, Reine Marie Henriette, Climbing Devoniensis, Boule de Neige, and an assortment of Hybrid Perpetuals, which are forced for winter consumption. The most desirable points in a market Rose are continuous and abundant blooming, long stems bearing single buds, and robust foliage, with fragrance, clear color, and good keeping qualities in the flower. The shipping trade has grown to be a very important item, and is the outlet for our surplus and which keeps prices up so as to afford a fair remuneration.—*W. T. Stewart.*

Blackberry Culture. That the Blackberry can be successfully grown in Wisconsin has been practically solved. Prepare your soil well, manuring liberally. Plow thoroughly and drag all lumps down. Set your plants carefully at 7 by 3 feet apart and press the dirt around them firmly, hoe well, keeping the center of the rows well cultivated. In the fall cover your plants with earth. The first year you are laying the foundation for a profitable undertaking, and no care should be neglected. The second year more care is needed than the first. The new wood of this year is to give a bountiful crop of fruit. Protect the growth from being broken by the winds by placing a wire on each side of the row, supporting the same by stakes a rod apart. When the new growth is two feet high, nip the top off to cause the new growth to form strong side branches, and be better to handle. Covering also produces more fruiting wood. In laying down remove a little earth from the side you wish to lay the bush, then press the foot firmly against the crown and a fork to the top to bend it down. After it is over put a few spadefuls of dirt upon it, and the next plant will lop upon the first, and so on to form a close, compact row. After your row is down cover the plants just well out of sight, as more is not necessary.—*C. H. Hamilton, before Wisconsin Institute.*

Celery Seed Raising and Sowing. For growing Celery it is customary to sow seed under glass early in December; in March the plants will need transplanting into another bed under glass at three inches apart, and are to be set in the field about May 1, and will ripen a crop of seed in September. It was formerly the custom to set out in the spring old roots that had been kept over winter, but it is not so easy as the above described method, which makes just as good seed. For general crops seed is sown in April under glass, and is a job demanding a good deal of care. The bed should not be under the south side of a fence, but should be where there is a free sweep of air, and if partly shaded is better. The ground must be well manured and worked fine, and then beaten down firmly. The seed must be sown evenly and not too thick, and covered by sifting on one-fourth of an inch of loam. The sashes must be well aired as soon as the plants come up, which will usually be about four weeks after sowing, and they must be watched to keep them cool and moist, otherwise the hot sun will burn them off. It is a mistake to remove the glass too soon. About June 1 the plants will be ready for transplanting, either to a plant-bed, three inches apart, or to the rows in the field where they are to grow. The rows in the field are set four to five or six feet apart, and the plants at ten or twelve inches apart in the row, usually among the growing crops of early Onions, Beets and other crops.—*W. W. Rawson, before the Boston Market Gardeners' Association.*

The Use of Shrubbery and Flowers. There is a growing inclination to improve grounds and dooryards by the planting of ornamental shrubbery, vines and trees. Floriculture is also increasing, and greenhouses in the rural districts are no longer unusual. The following expressions bearing upon this matter have been culled from the sub-reports received from all over the state: "Marked improvement, especially in flowers." "Lawns about the houses are being improved, and annually a great many new things are planted." "Our people are beautifying their homes, this being particularly noticeable in our town." "Progress in floriculture quite noticeable." "In looking back over the last thirty years the progress in this line is wonderful, and is increasing yearly." "There has been more special interest taken in shrubbery, flowers and greenhouses during the year just closed than ever." "Taste in the decoration of grounds increasing." "Our people are gradually making advances." "The cultivation of shrubbery, plants and flowers is increasing." These are but a few of many like statements of correspondents. The celebration of "Arbor Day" is another beautiful observance introduced in this State, which it is hoped may be perpetuated. It is developing a taste for tree planting, and especially among school children. Through its kindly influences every school yard will in a few years be provided with grateful shade, and every man of prominence will have some tree named after him by the school children of the State. The pupils of the public schools will also acquire instruction through the planting of trees, and will learn that nothing valuable is to be obtained or preserved without labor, care and attention.—*E. B. Engle, before Pennsylvania State Society.*

The Newer Garden Vegetables.

[Read before the Western New York Horticultural Society by E. S. Goff of the New York State Farm.

With vegetables, as with fruit, many varieties are called, but few are chosen. Last spring ushered in the usual number of so-called novelties, some of which were old, many of which proved in no sense superior to what we had before, and most of which would not be missed if they were withdrawn. But it is as necessary to test a thing to find out that it is worthless as to discover its good qualities.

Beets. The Dracæna-leaved is a very distinct dark leaved variety. The root is small, conical, dark red. Its chief merit seems to be in its distinct appearance. The New Early Red Flat Turin is a small flat deep-red sort, excellent for use while young; less productive than the Egyptian or Eclipse.

Carrots. The Chantenay is a blunt-rooted orange variety resembling the Nantes, but larger and more productive. I consider it a valuable addition to the list.

Lettuce. The Buttercup, introduced the past season, deserves especial mention. It is a fine heading variety of a beautiful golden yellow, suggesting the color of butter, and was one of the very latest to run to seed. In table quality it was pronounced the best among many varieties. I think it has come to stay. The Defiance Summer, offered as new by a New York firm, could not be distinguished from the old Perpignan, described many years ago. The latter is, it should be added, a very excellent summer Lettuce. The Imperial Select Cabbage, of Landreth, was the old Imperial, little changed except in the two new words added to the name. The Prize Market, of Sibley, was the well known Prize Head, under

a slightly different cognomen, and Sibley's Genesee, introduced as new last spring, proved to be the old Neapolitan, described by Burr twenty-five years ago.

Melons. The Algiers Cantaloupe, although not new, is deserving of especial mention. Of all the Melons we have tested, none has had such uniformly thick and firm flesh. In quality it is rich and high flavored, in size medium to large. Its chief fault is that it is rather late, though it ripened well at Geneva last season. The earliest Melon the past season, though not the finest in quality, was the Extra Early Cantaloupe of Gregory. For delicious quality I have found nothing superior to Miller's Cream Nutmeg, of Gregory. This is an oval shaped Melon with orange flesh that is exquisitely sweet, rich, melting and delicate.

Peas. The Advance and Carter's Lightning appeared to be the only new strains of well-known Philadelphia; and Rawson's Clipper was not perceptibly different in our test from the Alaska. Perhaps I should add that our test consisted of a single row, twelve feet long. Sometimes differences appear in cultivation on a larger scale that are not observable in so small a test. The American Beauty was a half dwarf wrinkled Pea of medium season, bearing numerous large pods that contained very large Peas of excellent quality. The American Champion, of Henderson, bore a very close resemblance to the Telephone, though as I did not have the latter to compare with it, I cannot pronounce it absolutely the same. The Delicious, of Gregory, was a very prolific half dwarf wrinkled Pea of medium season, and superior quality. I am not sure that it is distinct from all others. King of Dwarfs was a second early wrinkled Pea of good quality, and prolific for the size of the plants.

Radishes. The Shepherd, so largely advertised last spring, appeared to me scarcely, if at all, different from the Chartiers. I will not call them absolutely the same, but the resemblance is close.

Squashes. The Bay State, of Rawson, is a new winter variety of merit, though it is probably not in any respect superior to the Hubbard. The plant is productive, and the fruit is of excellent quality and keeps well. Dunlap's Early Marrow and the Extra Early Orange Marrow are two somewhat earlier and more productive strains of the old Boston Marrow. They deserve a place among the very best of our fall Squashes. The New Egg Plant Squash, of Henderson, proved to be the Citron or Mandarin Bush, of which the seeds came to us from Italy in 1886. The Red China is an attractive little Squash, but has such thin flesh that it will not become popular with us.

Pumpkins. The Red Etampes deserves mention for the benefit of those fond of Pumpkin pie, for which it is much superior to the common kind.

Tomatoes. The finer of the later introductions bear a very striking resemblance to each other. For example the Autocrat, Cardinal, New Jersey, New Red Apple, Optimus, Mayflower and Puritan all resemble the Livingston's Favorite so closely that no one but an expert would be able to decide between them. I do not say that they are all absolutely identical. They are not. There are certain minor differences, such as the amount of seeds produced, the tendency to crack in wet weather, etc., but all of them are strictly first class varieties, and will be very difficult to improve upon. Several Tomatoes introduced the past year possess very little value, except that they are early. Among these may be named the Bermuda, Early Richmond, Extra Early or Cluster, and Faultless, so-called. Two new Tomatoes appeared last season under the same name—the Golden Queen. These were quite distinct from each other, and both are superior to any large yellow Tomato heretofore introduced. In size and smoothness they are little inferior to the finest red varieties. I have failed to find all the virtues in the Mikado Tomato that have been ascribed to it. It is of large size, but so many of the fruit are irregular that I consider it inferior to many others. Livingston's Beauty very closely resembles the Acme, though said to be distinct from it in parentage. It produces fewer seeds than the Acme, and is claimed to hold its size better late in the season. The Peach Tomato is interesting as a novelty, and has a singularly sweet flavor, but is too small to have value except for pickles, or possibly as a parent to new varieties.

Potatoes. The following, grown the past season for the first time, were productive in the order named: Sibley's Monroe County Prize was most productive, next in order came White Beauty, Lake Erie, Lombard, White Flower, Tunxis, White Bermuda, Sylvan, Summit, King's Excelsior, Dakota White, Morrell's Seedling, Early Puritan, Sunlit Star, Yosemite, Perfect Peachblow, Canada Prince Albert, Nye's Early Standard, Crane's June Eating, Polaris, Crown Jewel, Norway Mountain Rose, Hovey's Advance, Brown Beauty, and Crane's Keeper.

Irrigation in the Market Garden.

[Paper by Frank Wyman, of Arlington, Mass., before the Boston Market Gardeners' Association, followed by a discussion.]

The method of applying water must depend much on the source. A running stream higher than the land to be watered (damming the stream and leading the water where wanted) is not always to be had, and we must avail ourselves either of storage resources on high land, or use wind mills or steam pumps, drawing the water from deep wells when no better source can be had.

Whenever land is to be irrigated it must be well drained, or it may suffer damage if wet weather follows watering.

Mr. Wyman's works, built in 1883, comprise a powerful 10,000-gallon per hour pump, an elevated reservoir holding 100,000 gallons, and four-inch distributing pipes reaching over several acres. The source is a well.

Mr. Wyman's plan to apply water to crops is to run it in furrows near the rows of vegetables. He wets the roots pretty thoroughly about once a week as long as dry weather lasts, not stopping for a slight shower of rain. To water partially, or to stop watering after once beginning in dry weather, was worse than no watering. The speaker would not attempt to water more than he could do well.

He had not yet had occasion to work his apparatus at its full capacity, the droughts not having been severe or long continued.

In answer to a question Mr. Wyman said he had used water on Cucumbers and early Cabbages with decided advantage. Had never derived much benefit from watering Celery, though he had tried it. His reservoir could be dispensed with, but the pump was none too large for a severe drought.

Mr. Kirby, of Arlington, alluded to the drying up of streams in consequence of cutting away forests, and to evaporation. It is estimated that a Cabbage in full growth will evaporate three pounds of water per day, or an acre over a ton of water; that 400 pounds of water are evaporated to every pound of growth in vegetables. The loss also from surface evaporation is very great in hot dry winds, each 27° of heat doubling the absorptive power of the air. To do much good much water must be used in irrigation.

To wet the soil well in a dry time requires about an inch of rain, or 27,000 gallons per acre. Mr. Kirby used a steam pump of capacity to throw ninety gallons per minute, and could water two acres per day. He suggested the idea of applying water by means of tiles under the surface about two feet deep, which would also drain the land in spring if an outlet were provided. He alluded to the Crosby farm, where the tiles had been flushed in a dry time with great advantage to the Celery.

Mr. W. D. Philbrick said that irrigation by underground tiles had been practised on vineyards and other crops having very deep roots, but many of our vegetable crops root within six inches of the surface. Tiles at two feet deep in sandy land would lose much water downward. They would have to be one and a half or two feet deep to be out of the way of the plow in Celery fields. If well buried the tiles will stand frost many years.

Mr. Henry Allen had no confidence in applying water in tiles. He watered by surface furrows.

Mr. Rawson said he could do a good deal of watering with an outlay of $1,000. His two windmills give water enough for watering hot-beds and washing, etc.; he also had several steam pumps, one of them portable, 2,000 feet of engine hose and a good deal of pipe; his water works cost $5,000 or $6,000, and was a good investment. He watered in the furrow. Three men could water four acres of Celery per day, costing not over $5 per acre. The hose must be carried to the highest point and water run down the furrows. It paid him well.

He thought there was more water under most farms than people were aware of. He had one well that would supply a three-inch stream steady night and day. Two others would each deliver a two-inch stream. If he could buy hydrant water at ten cents per 1000 gallons, and had no pumps, etc., he would prefer to buy water. He works his pumps night and day when once started; it saved time and coal, and night is the best time to apply water.

Mentioned visiting a farm lately very favorably situated, where an outlay of $900 would irrigate fifteen acres of land.

Mr. George Hill said his supply of water for five or six acres came from a storage reservoir on a hill, where he had dug out an old pond hole, and built a dam to retain the water. Did not think that good, strong land, well manured, needed much water in general. Had seen injury done early Cabbages by watering them early in the season, but when Cucumbers are filling out, and when Cabbages are heading or Strawberries ripening, if the weather is dry, it is a great help to use plenty of water. He uses large pipes, at least three inches, and waters thoroughly.

Mr. Frost thought that as good crops were grown in old times without water as now with it.

Mr. John Fillebrown believed that watering had always paid him well in his experience of twenty years in the use of steam pump and hose. He used a three-inch pipe, $2\frac{5}{8}$-inch hose with seven-eighths nozzle, and strong head so that the water would fly 100 feet from the nozzle.

It was noticeable in this discussion that the men who believe that irrigation pays were men whose farms are situated on the sandy plain of Arlington, while less positive are the owners of stronger and better land.

Success and Failure with Small Fruits.

Continued from page 152.

Culture. Strawberries are grown in hills, matted rows, and a compromise between the two. I take the compromise, the hill culture does not produce enough fruit, but makes a large fruit; the matted row, like anything else that has its own way, leads to small fruit. My method is to keep all runners from plants until the middle of August; this gives the plants a good start. Then I let two runners run on each side of the plant and keep them spread. Then clip the end from the runner, this gives the plant plenty of room and admits air at fruiting time, and the plants will stool out finely.

Where many make a failure is in planting year after year on the same soil. This should not be done, for it gives rise to rust and insects which destroy both plant and fruit. I have never been bothered with either.

After two years of fruit I plow under and work to vegetables. We should have a point in view, and that to improve our fruits. I have in the last few years brought the "played-out Wilson" up to the finest berry on the farm by selecting the finest and well crowned plants, and retaining their vital points. I change my plants every year, one year planting from clay ground to sandy soil, the next from the sandy back to the clay. As soon as the pickers finish the rows the last time the horse and plow lose no time in going in. I use manure as a mulch, hence the first year it goes under. When used the second year it is plowed under with the large plow. These old vines are worked down like young beds, and this year they are the best owing to the severe drought.

One point on the Raspberry just here: many people after they gather the fruit let the vines go until the following spring before anything is done with them. As soon as my fruit is gathered all the old canes are cut out and burned, and all the young canes but the three best. The old cane has finished its mission, and why keep it there to pump sap from the roots that belong to the young vines. The old vines are often the cause of blight and insects, and when burned this puts an end to all and adds ten-fold to your next year's crop.

Varieties. My main berries for cultivating for profit are the Wilson, Crescent, May King, Cumberland, Sharpless and Carmichael. I have given these in the order they are planted, except the last, and of which I have not had many plants. I have all of them, and just as soon as I am satisfied in my own mind that certain ones will do well, I plant of such for profit. I think every grower should test new varieties on a moderate scale. Fruit growing is a science in which very few have reached the top rung, like any other occupation. It takes years of hard work and study before you can achieve the required success. I have often after retiring spent hours thinking of some way I could reduce the cost of production when those around were

wrapped in their slumbers. When a person gets so interested in his occupation that it rests on his mind, he is sure to be successful, I care not what business it may be. It has never entered my mind to reduce the time of cultivating, but to see if I could cultivate oftener with the same capital invested.

In General. Many failures are made by farmers who think they can make a success of growing fruit in a year or so. This is a mistake, and it cannot be done, for you have to become accustomed to its secrets. Were I to stand before you all day I could not tell you all that has to be gone through in the cultivation of fruit. Nor could you tell me your rotation of work on the farm. Whatever may be a possibility as to size, yield or growth of the plant to the amateur, these matters are not for the commercial grower if not compliable with a clear, economical investment. Look at the matter as you may, the question arises: "Will it pay?" This is a test by which the whole matter must be tested.

Knowledge is power in fruit growing as well as in any other occupation, and the man that knows most about his business is the one that will be successful.

I cannot but believe that manure this year has an added value next, with the strawberry especially, for the manure in this time becomes more available for plant food. It requires more manure for some varieties than for others. The Sharpless and Cumberland require more fertilization than Wilson or Crescent. Why? Because they require more plant food; it takes a greater amount for the plant, and should the plant take all the substance from the soil, what would become of the fruit at fruiting time? To the man that grows poor fruit we can give but little encouragement. He is like the poor farmer; he meets discouragement every time he turns. He will neither give good culture, nor has he money to spend for fertilizing. The cost of plants and experience of setting are the same to him in whatever way he goes at it.

The Strawberry Midget.

[*From a Paper by Clarence M. Weed, Champaign, before the Central Illinois Horticultural Society.*]

About the middle of last May there began to appear in the local papers of some of the principal Strawberry-growing regions of Illinois accounts of a minute "midget" that was swarming in the Strawberry blossoms, and was supposed to be blighting the fruit. The insect was generally believed to be entirely new. Some observers saw the insects in Raspberry and Blackberry blossoms, and were apprehensive that these also would be injured.

It is a Thrip. The Thrip family (*Thripidæ*) to which this Strawberry midget belongs is a peculiar one, which has as yet been very little studied in this country. In Europe, something over forty species have been described, but American entomologists have so far recognized only about one-third this number. The *Thripidæ* are minute, active insects, mostly less than one-tenth of an inch long, having delicately-fringed wings folded flat upon the back, with free mouth parts, by means of which they can both bite and suck, and two-jointed tarsi without claws.

The species in question was described in 1855 by Dr. Asa Fitch, at that time State Entomologist of New York, as *Thrips tritici*, or the Wheat Thrips. It is yellow in color, with the thorax tinted with orange, and the antennæ with dusky annulations. The female is larger than the male, the wings in the latter reaching beyond the abdomen, while in the former they do not extend to the tip. The Wheat Thrips occur abundantly throughout the season on blossoms of clover, Wistaria, Apple, Pear, Raspberry, Blackberry, and many other plants. Its life history has not been fully traced, but probably is similar to that of related species which are known to pass the winter as adults, and deposit their eggs on the surfaces of the leaves in April or May. There are probably many broods each season.

How it Inflicts Injury. Prof. Herbert Osborne states that he has found what was probably the same species as our Strawberry midget in Apple blossoms, doing serious injury to the style of the pistils. A careful examination of a number of unopened buds revealed the fact that in eighty per cent. of them the style had been more or less injured by biting and puncturing. He became convinced that they were doing much injury by preventing the fertilization of the flowers.

The injury to the Strawberry blossom is very similar to that just described. I examined hundreds of blossoms at Normal and found that those in which the Thrips were swarming almost invariably had a large proportion of the pistils seriously injured, the styles being usually the part attacked, and soon became black and dead. Of course the effect of this prevention of fertilization is to dwarf or blight the berry, as the receptacle does not develop beneath non-fertilized seeds. Probably much more damage was attributed to the Strawberry midget than it really did. The effect of its injury is much the same as might result from half a dozen other causes, and I am inclined to believe that much of the blighting was due to an insufficient supply of pollen quite as much as to the midget, and that had the weather been favorable to a strong, healthy development of the blossoms the injury would not have been so great as it was.

The Worst in Dry Seasons. The past seasonal superabundance of this insect is probably due to the extraordinary dry weather of this and preceding years. Dry weather is favorable to the multiplication of most terrestrial insects. Inasmuch as these insects have doubtless been present in the Strawberry fields of Illinois for many years, but have never before been known to do such serious damage, and as this increase in numbers was concomitant with the extreme dry weather, it does not seem probable that there will be a regular repetition of the damage in the future. This insect may possibly serve to emphasize seasonal extremes of weather.

Remedies. Little can yet be said upon this part of our subject. It is not probable that the burning of plantations after the fruit is gathered will produce any appreciable effect upon their numbers, as they largely leave the vines when the blossoming season is over. Nor does it seem probable that topical applications will prove of practical value. It does seem desirable, however, that the supply of pollen should be as large as possible; and I believe that many of our growers would be benefited by planting a larger proportion of staminate varieties.

Some Insecticides and Their Uses.

[*Extract from a paper by Prof. F. M. Webster, before the Indiana Horticultural Society. Observations by N. Ohmer.*]

Arsenical Poisons. Of poisonous substances, used as insecticides, Paris green, London purple and white arsenic are the most popular, their popularity being in the order given.

Applied in the powder unadulterated Paris green should be thoroughly mixed, ½ pound to 20 pounds of flour, or some other powdered substance, and this mixture dusted upon the plants to be protected. In a liquid form the same amount should be mixed with 40 to 50 gallons of water, and applied in the form of a spray, using only enough of the mixture to wet the foliage, without drenching it. London purple is used in the same manner, but only about ⅛ of a pound with the above amount of flour or water. Many people prefer the purple to either of the other substances. White arsenic should be used in the same proportions as London purple, but if used in the liquid form, it should be first boiled in a small amount of water, and this added to the required amount of water to properly dilute it. For single applications for leaf-eating insects, a slightly larger amount of the poisons may be used, but where the plants require several applications, the proportions given will be found the most satisfactory.

The efficiency of these applications in combating the Apple worm of the Codling Moth has been settled beyond the shadow of a doubt. Experiments indicate that the loss by reason of the attack of this insect could be reduced 69 to 71 per cent by the application of a spray of Paris green and water, three times during the season.

In the experiments of Mr. Hammond of Illinois, a mixture of London purple and water was used, mixing one-half pound of the former with about forty gallons of the latter, and spraying three hundred Apple trees three times, the cost of these applications amounting to three cents per tree. From these three hundred sprayed trees there were gathered 500 bushels of Apples, eighty-five or ninety per cent of them marketable. From the same number of trees in an adjoining orchard not sprayed not a peck of perfect fruit was obtained. Mr. Hammond thinks his mixture was too strong this year, and next season will reduce it to the extent of using one-half pound of the purple to sixty gallons of water.

In using these mixtures they should be applied as soon as the bloom disappears, and not continued after the calyx of the fruit has turned downward, whether to destroy the Codlin Moth, or leaf-eating insects. No stock should be allowed to graze in the fields where these poisons have been applied, until after several drenching rains have fallen.

Either of these substances can be used in the powder for poisoning baits for cut-worms. These baits are simply bunches of clover or leaves of Cabbage, sprinkled with the powdered poison, and these laid upon the ground where the worms are known to depredate, and when the latter come forth at night to feed, they partake of the baits, instead of the plants, and are destroyed.

Kerosene emulsions are very effective when used against plant lice, Squash bugs and Chinch bugs, none of which the arsenical mixtures will kill. They may be made in three different ways. *First.*—By mixing one part milk and two parts kerosene, agitating this until it forms a butter-like mass, which may be reduced in strength by adding thirty or thirty-five parts water. *Second.*—By dissolving half a pound of whale-oil or other soap in one gallon of hot water, using this instead of milk, adding the kerosene while the mixture is still warm. *Third.*—By substituting eggs for either milk or soap, using eight eggs to one gallon of kerosene, and diluting this with water to the proper strength. These emulsions are all of them used in the form of spray.

Pyrethrum may be used in the powder mixed with five or even ten times its bulk of flour and dusted on the plants, though the mixture should stand in an air-tight vessel several hours before using, in order that the flour may absorb the strength of the pyrethrum. The powder also must be studiously kept from the air, as its strength is soon absorbed by the atmosphere. This is a perfectly harmless substance.

Whale-oil soap is used to form a suds, which may be sprayed upon the plants to be protected. This or any bar soap may be rubbed on the trunks of trees to protect them from the attacks of borers.

Miscellaneous. Lime, ashes, soot, sulphur and even road dust is sometimes dusted upon plant lice, but usually with little effect. The fumes of sulphur, as well as those of tobacco and tar, are used to drive away insects. Tobacco water is often applied with good results. Carbolic acid, one part to one hundred of water, is used both for above ground insects and under ground ones.

As I have many times stated, ninety per cent of the efficiency of any insecticide lies in its being properly applied and at the proper time.

N. Ohmer's Experience with Apple Worms. I would like to say a word with regard to London purple for the Codling Moth. We applied the poison just at the time they were blooming; about two weeks after we repeated the dose. In going to the house for water my men would sprinkle several of the trees frequently which they passed as they went and came. We noticed these trees had scarcely an imperfect Apple on them. Those not sprayed but once or twice were not so good. This satisfied me that it can not be done too well. Those not sprayed so much were probably about one-fourth as good. I know of nothing that would pay better than a spraying machine, effectively used at the proper time.

From one to two gallons of the preparation can be used to a tree. It took us a day and a half to go over 500 trees. The article itself costs 15 cents per pound. I prefer London purple because it does not need stirring up all the time. Paris green has to be stirred almost constantly to keep it from settling. There seems to be no danger of getting the poison in your eyes, or otherwise poisoning. My boys came home wet with the spray, but it did not hurt them. The majority of men, who give their experience, say to use about one pound of the poison to 100 gallons of water. I would take one pound to 120. It is best not to make it too strong.

The Garden Culture of Roses.

[*A Paper by William H. Spooner, read before the Massachusetts Horticultural Society.*]

Notwithstanding the many treatises that have been written on rose gardening, said Mr. Spooner, the commercial cultivator is constantly met by anxious inquiries as to how Roses shall be grown and what varieties. The purpose of this paper was to make some suggestions founded on his own experience.

Soil and its preparation. Any soil may be worked into the proper state for Roses by careful treatment. The soils naturally best are those of tenacious character, or such as are not likely to dry quickly; but any good soil, properly trenched, after being well drained and thoroughly subsoiled, will be likely to produce the desired result.

Autumn is the best time for trenching. In doing this take a given amount of ground, dig a trench at first a spade in depth, and half that in width, removing the soil to the other end; then turn up the subsoil at the bottom of the trench, place on it a plentiful supply of manure, not stirring it in; cover with the soil from the next trench, and so on till all is complete. Half-decayed leaf mold, spent hops or fresh manure will answer the purpose, and the manure will be in good condition for the plants by the time the roots reach down to it.

Planting. A space of three feet between the rows and two feet between the plants is a suitable distance, as the plants can then be easily banked with soil for protection in winter—quite an essential matter with Teas.

In planting, dig the rows about twelve inches wide and from sixteen to eighteen inches deep. Place in the trench a liberal supply of well-rotted manure, with a little ground bone, all to be turned under with a garden fork. In this trench set the plants, and firmly press the soil about the roots—a very important part of the operation.

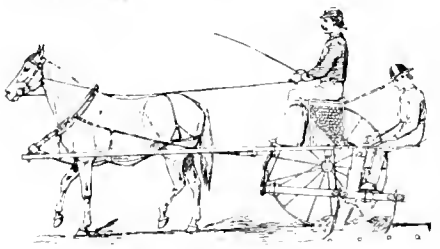
If it were possible to keep our Roses covered from the middle of December to the middle of March with a blanket of snow, what splendid plants we should see in early spring, instead of the pinched and withered stems that are frequently found! A Rose does not like coddling; a uniform cool temperature, free from drying winds, is the most congenial to the plant. In autumn planting (which is the best except for Tea roses and their allies) there is no danger from drought, whereas in spring, if the weather is dry, newly planted Roses suffer from excessive evaporation, though frequent sprinkling will check this in a measure, and if the plants are mulched with manure on the surface, it will tend to prevent excessive drying of the fine roots.

Stocks. Roses, if not on their own roots, are worked either on Manetti, Briar cutting, seedling Briar, or De la Grifferaie, and it is a matter of much dispute among cultivators which is best. This difference is likely to continue, as the finer varieties cannot be had except worked on one or the other of these stocks.

The Manetti, for rapid increase and early maturity, is by far the best, especially on light soils, though it will flourish on almost any soil. The leaf of the Manetti is not very easy to distinguish from the ordinary rose leaf; the stem, after attaining a little size, is of a reddish tinge, the suckers coming up about the stem.

The Briar seedling is suited to wet soils, producing its roots in a thick cluster at the base of the shoot, while the Briar cutting is best for dry soils, as its roots are produced from the surface to the bottom of the stem.

In the Briar unlike in the Manetti the sucker is likely to appear some distance from the main plant. This stock starts late in spring, which causes the plant to flower later, and perhaps rather more freely during the season. It is well adapted, for this reason, to the Tea rose, which is grown almost entirely in this way in England, and is admirable for bedding purposes, growing with great vigor.



An Unpatented Planter.

The Grifferaie stock is strong and well adapted for this purpose: it is in itself a Rose of great vigor and hardiness, a very free bloomer, and quite distinct in color—so much as to be noticeable in a collection.

Plants on their own roots are of slow growth, making very fine roots and requiring from two to three years, or more, to become good substantial plants, equal to those rooted on Manetti stock, at one-third the age. In using the Manetti stocks if planted two or three inches below the collar or junction of the bud with the stock, the Rose will throw out roots of its own, and with this addition will produce plants of remarkable vigor. A very good method of developing the roots rapidly is to tongue the collar of the bud by paring up a strip of the bark about one inch long on each side of the collar, and planting this below the surface.

A sure plan for obtaining own-root Roses is to take those plants that have made strong growth one season in the ground and were lifted in autumn, potted in four-inch pots, and kept in a cold frame free from frost during the winter and started on in March in a little heat. These make fine stock for planting in the ground in June and on until August—perhaps the most satisfactory way to procure own-root plants with success.

(To be Concluded.)

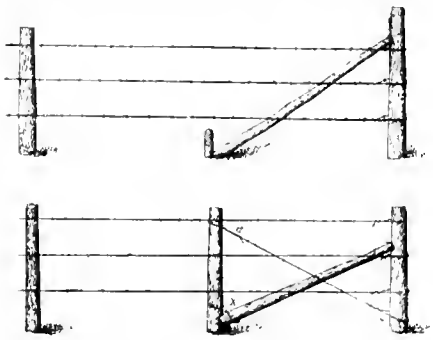
CONDENSED GLEANINGS.

Managing the Manure. It will pay wherever stock is fed to have the manure heap under cover so that rain will not wash away the best ingredients. Under such a manure shed a tank could be constructed to catch the liquids, and these pumped over the heap would wonderfully improve its quality. Manure too dry will lose as much quality as when kept too wet. If moisture is not present during fermentation the manure becomes overheated or "fire-fanged," and a serious escape of ammonia takes place. Ammonia in farm yard manure, says a noted chemist, may be produced in two forms. It may be associated or combined with decaying vegetable matters as organic acids; and in this condition, while it may be washed away by water, it cannot be drawn into the air, as it is not then volatile. If, however, these acids have, by reason of a scarcity of water or otherwise, changed into carbonic acid, and have combined with the ammonia in this form, then the ammonia is exceedingly volatile. Fermentation may be regulated. If air be excluded, as by the manure being packed down close by animals on it, it goes on very slowly, whereas it is quickened by a proper admission of air, as by turning manure and throwing it together lightly in a heap. Practice has shown that gypsum is the farmer's best medium for fixing ammonia. For this purpose it is sprinkled in the proportion of one ton to every 100 tons—or 1 per cent—of manure as the heap swells in size. While the manure is fresh, even fresh lime may be applied with impunity. The action of lime is to hasten the conversion of ammonia into nitric acid, from which nitrate of lime is formed. The idea in decomposing manure before its application to the soil is to make it immediately active as plant food. Where it is plowed into the land fresh, decomposition has to take place there before the plant food is set free, hence the action of the manure is tardy.—Farmers' Review.

An Unpatented Planter. The construction of the Potato planter attachment to a sulky Corn plow, shown in the figure, is very simple. The hind shovels are changed from the outside to the inside of the beams; the front ones are taken off and one of them is put on an extra beam between the regular ones. To the back of this shovel is attached a pipe made of heavy sheet iron front and sides and wooden back. The space between the seat springs is fitted with a feeding board with a hole in it. From this hole a hose, made of an old rubber boot leg pieced out with a piece of grain bag, reaches down into the pipe, as shown. A seed box is fitted between the standards, with an opening at the back, so that the pieces will work out on the feeding board just in front of the hole. A spring, not shown in the cut, is fastened to the axle to rap on the spokes of one wheel as the wheel revolves. Then the man who does the dropping pokes a piece down the hole at every rap of the spring. The spokes are one foot apart, and for a longer distance wire nails are driven into the hub for the spring to strike on. Of course, the team must walk slowly and steadily, and by driving one wheel in the furrow made by one covering shovel the time before, the rows will be about three feet apart. I have used this "rig" for two years. It gives good satisfaction, putting the seed in the most earth without drying it in the hot sun and wind—with it I can plant three or four acres a day.—Corr. Rural New Yorker.

Lettuce Culture. I tried experiments last season to determine how old and how large plants should be before the final setting. Seed planted in September and the plants wintered over in flats in my winter cellar did not make heads as large or as quickly as those from seed sown in the greenhouse in December, pricked out into flats and set out at the same time to the hot-beds in February. In a later trial for open-air Lettuce, plants set under glass in cold frame 3x4 inches apart, and left there till they could be removed to the open ground, being one-third grown, were not so early as plants that were set from the same seed bed into the open ground; the latter suffered from cold, but made heads at last before the others, much to my surprise. I think I let them grow too large in too rich soil, the roots were rather poor, the earth did not stick to them. In another trial plants pricked out into poor sand, fertilized with commercial manure, made abundance of root and small leaf growth, were slow in coming to suitable size for transplanting, but when finally transferred to rich soil, they grew without wilting or loss of time and with great rapidity. The conclusion seems to be that Lettuce seed sown thinly in the seed bed and afterward transplanted, when the plant has four or five leaves, directly into the spot where they are to grow, is good treatment.—N. Y. Tribune.

End Posts of Fences and Trellise. These should be especially strong and durable, since they are



Bracing End Posts of Frames and Trellis.

the foundation strength of all wire fences. Braces holding against the regular tension of the wires tend to lift these posts out of the ground, on which account they should be extra long and set 3½ to 4½ feet deep and tramped with great care. The usual way of bracing, shown in the upper figure, is quite faulty, the brace being too high up on the post and standing too vertical. It should rest nearly against the center of strain on the post and more nearly in a horizontal position, as shown in figure 2, where it meets the post near the middle wire, so as not to lift the post out of the ground. A wire connecting the top of the second post with the bottom of the end post, see Fg. 2 *a*, prevents the brace from pushing it over. A very good way is to bring the lower wire around the end post and instead of attaching it here carry it back to the top of the second post, where it should be fastened. In case a brace like the first one is repeated between posts two and three, then the second wire may be brought around in the same way as the first one was and passed to the third post for fastening. Braces can be secured so as to not slip from the post by nailing a loop of wire securely across and to the post, as at *x* in Fig. 2.—Prairie Farmer.

Liquids for Chrysanthemums. Two very essential things to have close to the summer quarters is a liquid manure tub and a lime-water tub. A perfectly safe liquid manure is made from fresh cow-dung and soot. Into a tub, the size of a paraffin cask, I should put a large pailful of cow-manure and half a pail of soot together in a coarse canvas bag. The bag should be tied, and when well soaked poked with a stout stake to get the essence out. I should commence giving manure water to the plants as soon as the flowering pots are fairly full of roots, giving it weak at first, and as the buds are set increase the strength, give manure water at every watering. Replenish the manure in the sack as soon as it is exhausted. Keep on up till the time they are in flower. For lime water, put into a cask one pailful of new kiln lime. Let it settle and it will be fit for use. Worms do great injury to the roots of Chrysanthemums. Any pots that contain worms should have a watering of lime water to kill them. The disturbed state of the soil, or the casts on the top, will show where they are. It will not hurt the plants.—George Stevens' Catalogue.

Home-grown Huckleberries. The best varieties and species of Huckleberry should be found in every garden where Blackberries and Raspberries are cultivated. In a wild state the bushes of even the "Swamp Huckleberry" are frequently found on high, dry sandy soils, and such

bushes are often loaded with fruit when those in the swamps and low grounds are barren because late frosts killed the flowers. Plants found growing on high, dry ground can be taken up with less labor than those growing in low ground, and usually with a ball of earth about their roots. There is no risk in moving such plants; at least I never had a plant fail when moved in early spring, and I have handled many a hundred during the last twenty years. A Huckleberry plantation is very much like an Asparagus bed as to permanency, for with ordinary care either will last a lifetime.—A. S. Fuller in N. Y. Tribune.

Preserved Rhubarb. Unless we preserve some Rhubarb for autumn and winter use, we shall be unable to partake of one of the most healthful and blood-purifying dishes known. To have a supply of this wholesome fruit, cut the Rhubarb as for tarts, and to every quart give one pound of sugar. Put the sugar over the Rhubarb and leave it twenty-four hours to draw out the juice. Boil the juice and sugar together for twenty minutes or so. After it begins to boil fast at the edges of the pan, add the Rhubarb, and boil it slowly for twenty minutes longer. By this way of doing the preserve, the pieces of Rhubarb remain separate from each other. No need to stir the syrup or preserve if slowly boiled. The Rhubarb and sugar do not require a warm place to draw out the juice. This keeps in a dry place, and is a good relish.—Horticultural Times.

Evaporating Fruit. Prof. Arnold, in the New York Tribune, says evaporating fruit has been a god-send to horticulture and to the human race, by converting thousands upon thousands of bushels of fruit every year into wholesome and delicious food which would otherwise have been lost. Farmers all through Western New York find that evaporators suited to their needs pay better than selling the green fruit, and far better than making it into cider to prove a curse to the consumer. An evaporator will cost about $5 for each bushel of Apples it will dry per day. The "running expense" in labor and fuel for evaporating Apples is 10 to 12 cents a bushel; Raspberries, 4 to 5 mills per quart; Peaches, 25 to 35 cents a bushel. In a large way it costs less than in a small one.

Akebia Quinata. We could hardly spare this useful and pretty vine. Its trifoliate leaves, apparently so tender when young, are sturdy enough for any weather, and the plant itself defies our most severe winters. Its rapid growth and its early plum-colored flowers, with their delicious fragrance, make it altogether desirable. When planted where thick yet not dense shade is required no vine is more effective. One of the best ways to propagate the Akebia is to take half ripened wood in midsummer, cut into lengths of from one to two eyes each, and insert them in pans of sand and water.—Garden and Forest.

The Barren Garden. I know wealthy farmers who never make more than one planting of Peas, who never provide for a succession of any garden crop; who have no Asparagus bed, who never think of raising Celery, Cauliflower or any of the more delicate vegetables, who never have a Strawberry on the table except the wild ones occasionally found in the meadows, or a Raspberry except the Blackcaps along the fence rows. A well-tended garden pays in money, not to speak of comfort and health.—Corr. Philadelphia Press.

Contageous Diseases of Insects. The entomologists, microscopists and bacteriologists working in harmony may yet be able to cause the destruction of many species of injurious insects by introducing among them certain fungi or bacteria. We now use Paris green for poisoning the food of insects. But imagine a solution sprayed upon trees or flowers, which, though perfectly harmless to man and plant, is death to the insect, and exerts its influence through diffusion and heredity to destroy the species.—Stephen A. Forbes.

Small Core of the Baldwin. The seeds are in a heap, are few in number, and thus for the size of the fruit allow an unusually large proportion to be eaten. This is perhaps one reason why the Baldwin has attained so great popularity. Its quality is perhaps not of the best, but its fine color and great yields make it a favorite with both the consumer and the grower.—Am. Cultivator.

Soot as a Fertilizer. Save it carefully from stove and pipes, and on a calm, damp morning scatter it thinly over grassplots and beds of early sown vegetables. It is excellent as a manure, and, besides, is destructive to slugs and other vermin that go abroad in the dark, eating the seedling plants as they come up. It checks the growth of moss among grass.—Philadelphia Press.

Dwarf Apples. We have never seen an Apple on Paradise stock except upon our own grounds, where we have about one dozen trees. They are wonderfully prolific. An Alexander has borne full crops each season for about 10 years. It is necessary to thin out the fruit severely, and even then often to prop up the branches as a support to the large, fine fruit.—Rural New Yorker.

Asparagus Beetle. Dry caustic lime scattered over the plants in the morning when wet with dew is a remedy. The larva of the Asparagus beetle is a small, soft, naked, thin-skinned grub, and the least particle of lime coming in contact with this causes almost instant death. If the grubs are killed there will be no beetles.—American Agriculturist.

Small Accumulations are a Power. A lady writes that she lays away five cents each day for the purpose of buying fruit plants, vines and trees for her home. Ought this not to shame those men who smoke $50 worth of cigars each year, and have no money to spare for this better purpose.—Green's Fruit Grower.

Equality in the Garden. A white Lily or a Rose or a Pansy beside the cottage door may be as fine as the Lily or the Rose or the Pansies in a queen's garden.—F. W. Burbidge.

Rich Soil; Fine Roses. There is no plant that enjoys plenty of good manure more than the Rose, and a lack of this will always result in scraggy plants and miserable blooms.—London Garden.

The school grounds all over Connecticut have, through Arbor Day, been changed from plain, cheerless, uninviting *yards* to attractive, shady parks and groves. —B. G. Northrup.

Sharpen Them Up. A grindstone is not the best instrument for sharpening hoes and similar tools. Fasten in a vise, and use a large flat file.—Dr. Hoskins.

Good Tillage. One acre of land well prepared and cultivated produces more than two which receive only the same amount of labor used on one.—New South.

The Monster. Don't buy a green flowered Rose because it looks like a monstrosity, and is neither beautiful or ornamental.—Rural New Yorker.

A Hint for Gardeners. There is nothing like having a reputation for doing things well.—Rural World.

Florida has about two hundred and fifty varieties of Oranges.—Philadelphia Record.

The tree is father of the rain.—Old Proverb.

Vegetable Products on the Table.

Apple Lemon Pie. The rind and juice of one Lemon, a piece of butter the size of a walnut, two Apples chopped fine, one egg one cup of sugar.

Strawberry Dumplings. Make crust same as for short-cake; roll half an inch thick; put about a gill of berries for each dumpling. Bake, steam, or boil half an hour.

Horse-Radish Sauce. To one tablespoonful of grated Horse-radish add one teaspoonful of made mustard, one teaspoonful of granulated sugar, and four tablespoonfuls of vinegar; beat all thoroughly together. This sauce is especially good with roast pork.

Potato Custard. Grate six large Potatoes and add to them one quart of boiling milk; stir in three beaten eggs and one-quarter of a pound of sugar; boil seven minutes, taking care not to let it burn, then add one-half cup of butter. This will make three good-sized custards.

Date Pie. One pound of dates, one quart of milk and three eggs. Season the same as for Squash pie. It needs no sweetening. Put the dates in the milk and heat until they are soft enough to sift. This makes two good-sized pies. Use one crust, the same as for Squash.

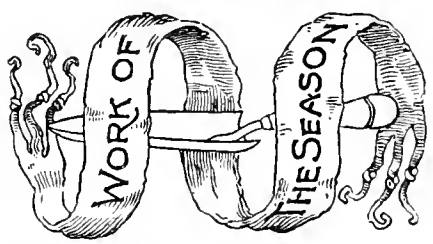
Sante Sweet Potatoes. The "left over" Sweet Potatoes are palatable thus prepared: Fry a slice of salt pork and pour off a part of the fat, then fry two slices of Onion; remove these and put in the Potatoes cut into dice and fry, seasoning with salt, pepper and butter, and turn out on to a hot dish. A little chopped Celery or Parsley added give variety to this breakfast dish.

Salsify or Oyster Plant. Scrape and cut into convenient pieces and throw at once into cold water, in which a little flour has been stirred (to keep from discoloring). Boil in salted water until tender; drain, melt some butter, stir into it some flour; let it get yellow, not brown, pour into it some boiling water, or milk, if preferred, season with salt, pepper, and finely minced Parsley, put into it the drained Oyster plant, boil up and serve.—Mrs. L. B.

Celery Salad. One head of Cabbage, three bunches of Celery chopped very fine; take one teacup of vinegar, lump of butter the size of an egg, yolks of two eggs, one teaspoonful each of mustard and salt, a pinch of cayenne pepper, two teaspoonfuls of sugar; mix well, then put on the fire and heat until it thickens, stirring all the time; when cold, add two tablespoonfuls of thick cream, pour over the salad, and if it is not moist enough add a little cold vinegar.—Cultivator.

Apple Pudding. For a quart of bread crumbs take a full quart of sliced Apples; put into a battered pudding dish a layer of Apples then a layer of bread crumbs, with butter, sugar and a sprinkling of nutmeg over each until all is used or the dish is full; have a layer of Apple for the top and a good supply of butter and sugar. Cover your dish and bake one hour, then frost it and put in the oven to brown; if too rich add a little milk in place of the butter—just enough to moisten. Serve cold or hot.—Florida Dispatch.

Clifton Potatoes. Choose eight medium-sized Potatoes, see that the skins are smooth and firm, wash well, and bake them. When nearly done cut a slice from the top, take out the Potatoes without breaking the skins, beat up with a little cream the whites of two eggs, a little salt and pepper, and about an ounce of butter. Replace the Potatoes in their skins, rub the slices of the Potatoes which you cut off with a little of the white of egg, and replace them like covers on each Potato, put them back into the oven, and finish baking for about ten minutes.—L. D.



HOUSE PLANTS.

Begonias of the flowering section to be kept inside during the summer will need ample light, but no direct sunshine. A sunny window kept lightly shaded will just suit. The showy leaf section will stand even less sun than the preceding.

Cactus. Such as require a shift should receive it now at the beginning of the season's growth. Many of these interesting plants bed out well.

Camellias may be moved out into some shady place, sheltered from winds. Water and sprinkle freely.

Chrysanthemums will now be growing rapidly. Shift whenever dense masses of roots appear on the ball of earth.

Cyclamens. Some of our best gardeners manage them through summer by planting them out this month in the flower border.

Hydrangeas should now go out. Treated to an occasional dose of liquid manure, the growth will be stronger and the flowers very much finer.

Ixias. See the directions given below for Oxalis.

Oleander. Directions for Hydrangeas will apply.

Oxalis that are done flowering should have the pots turned on the side to ripen the roots; later, shake out, wrap in paper, keeping them dry.

Palms. Shift, if needing it, when moving the plants out. Unless growing very fast they do not require this oftener than once every other year.

Shifting of all large subjects is best done just as the season's growth begins. Where one has fine plants, neat tubs or boxes add much to their beauty.

Summering. During this month all plants may be moved to their summer quarters; the hardier ones like Agaves, Azaleas, Oleanders, Hydrangeas, Laurestinus, Daphnes, etc., first, followed by the more tender ones at the end of the month. Most kinds do best in partial shade. To plunge such as are in pots, in soil, sand or coal ashes will save much labor in their care. Arrange them with taste according to size and appearance.

LAWN AND FLOWER GARDEN.

Annuals of all kinds may now be sown outdoors. See directions given last month.

Caladium esculentum rejoices in nothing more than in a very rich soil—it may be one-half manure—and in plenty of water. Then its growth will be a marvel.

Cannas. See note on Caladium, which will apply.

Climbers. Tender ones, such as Cobæa, Pilogyne, Madeira or Mignonette vine, potted Clematis, etc., may go out when hard frosts are past.

Culture. For the care of flower beds we want nothing better than a narrow rake and hoe combined, the rake part of which is used by far the most. The surface of the bed should frequently be gone over, say whenever small weeds appear, and after each rain, to break the crust of earth.

Dutch Bulbs. After blooming, and when ready to set other plants in the beds, dig the bulbs, carefully preserving the tops and whatever soil adheres to the roots, and heel in in some out-of-the-way place, so that

the bulbs may mature properly. When ripened store away until planting time in the fall.

Edgings. Keep these tidy by using an edging knife on them several times during the season.

Evergreens may still be moved. Be sure under all circumstances to keep the roots from drying.

Ferns to be planted early in shady or partially shady spots; the soil to be rather light and drained. Our native hardy Ferns are among the most ornamental and easily managed of hardy plants. A little care to water them in dry seasons, and giving them a little protection during the winter, with an occasional top-dressing of manure, will make them permanent features.

Gladiolus do well in almost any kind of soil. Plant the bulbs at least three inches deep.

Lilies. Greenfly sometimes trouble these in beds, to prevent which mulch with wet tobacco stems two or three inches thick.

Morning Glories are very attractive, and useful for hiding unsightly objects. Sow of the best seed.

Perennials. Even if well started, the plants of most kinds can be transplanted if done carefully.

Phloxes of the hardy section are, in the improved sorts, among the very best border plants. For doing their best, strong stools should be reduced to a few leaders, and these be supported by stakes.

Plans for the summer flower beds should all be in readiness before the day of planting.

Planting Out. This work is in order for the hardier kinds, such as Verbenas, Carnations, Stocks, etc., which may, excepting in the North, go out at any time now—the earlier the better. Do not hurry out the tender plants, like Coleus, Alternantheras, Tuberoses, etc., before warm weather is surely here. We have more than once seen June-planted teader sorts get way ahead of the same kinds set out in May.

Weeds. No good gardener will let them get ahead.

PLANT CULTURE UNDER GLASS.

Achimenes. Shade the plants lightly, keep in good temperature, moist atmosphere and plenty of air.

Asters are very suitable as pot plants. Do not allow them to become pot-bound. Air and water generously. They need a rich, light, sandy soil.

Balsams. The directions for Asters will apply.

Camellias that are through growing should have plenty of air and moisture, but less water, than earlier, but which does not mean that they should be stinted.

Cinerarias. Any particular plants that are specially choice may be propagated by filling the pot almost full with sandy compost, in which the suckers will form roots. Afterwards divide and pot separately.

Fuchsias that have flowered during the past winter should now be brought to a state of partial rest by reducing the supply of water.

Gloxinias. Directions for Achimenes will apply.

Orchids. The Indian species must now be in their glory, as to thriftiness, or never. They must be freely supplied with water and moisture in the atmosphere at this time. Such kinds especially as the Dendrobiums, Stanhopeas, Aerides, Saccolabiums, and Vandas, easily receive injury if this is neglected.

Pelargoniums. Provide shade, plenty of air, and coolness as they show flowers, if you would maintain their beauty for a good period.

Plants of many kinds that are kept in pots through the summer may go outside about the end of the month. Plunge the pots of free growers in soil, spent hops, or other material, to prevent rapid drying out. To set all such on a deep layer of coal ashes or on flagging, to keep angle worms out, is a good precaution.

Propagation. This is a good time to get up stock of Begonias, Euphorbias, Justicias, Heliotropes, Geraniums and all other quick-growing, soft-wood plants for use next winter.

Shelves. Lycopodium, Moneyvine, Othonna, Linaria, Tradescanthia, etc., can, for economy of space at this crowded season, be grown on narrow shelves placed midway from the walk to the bottom of the stages, as the shade here does not hinder their growth materially.

Specimen Plants. It is well to assist these with liquid manure sometimes. Attention to good forms by stopping the shoots of shrubby and branching sorts is in order now, in the season of free growth. Kinds that are in flower must have shade.

Watering needs close attention at this season of rapid growth; plants cannot suffer once, from drying out, without great injury. Wetting the walks and under the stages of the houses will provide favorable moisture, and will discourage that pest, the red spider.

FRUIT GARDEN AND ORCHARD.

Berry baskets and crates or other packages used for marketing to be got in readiness before the season fairly opens. All crates should be neatly and plainly marked with a steacil plate.

Blackberries. More suckers will appear than are needed for the next year's plant; all unneeded ones should be cleaned away. Tie up the new shoots when large enough.

Budded stock requires all the buds, except the one inserted, to be removed as they begin to grow.

Crooked trees to be helped by judicious staklag.

Cultivation of all young trees, at least for some years after planting, is a most essential condition of their making vigorous growth. By planting hoed crops in and between the rows, it may be done thoroughly and continually with double gains. Corn, because of its height, is to be avoided, as its shade will tend to impair maturity of growth.

Insects. The *Tent Caterpillars* hatch out early and should be destroyed as soon as ever the nests show. These are readily seen when livened up early in the day by the glistening dew in the sunshine. With gloved hands or else with a forked pole gather and destroy every brood that is in sight.

Borers should be cut or probed out wherever they are present. This may be known by the sawdust like castings of the insects, or by depressions in the bark. Look very sharp for these.

Curculio will commence operations before this month is out. By one course at least can they be destroyed and the crop be secured, and that is a safe and sure one, namely: to jar the insects from the trees early each morning into sheets spread under the branches, afterwards burning them.

Aphides, or Plant Lice, sometimes appear early on the young leaves; destroy by syringing with the kerosene emulsion or with tobacco water the color of tea.

The Currant Caterpillar, or Worm. Early in the spring, as soon as the leaves of the Currant and Gooseberry have fully put forth, watch for the first indications of the hatchings and commencement of the young larvæ. You have only to look for these as shown by small holes on the lowest leaves of the bushes near the ground. Sprinkle powdered Hellebore over these leaves, renewing it if washed away by rain. If the first brood of worms is destroyed there will be few if any to form a second brood in June.

Raspberries. See directions for Blackberries.

Strawberries. A dressing of fine bone dust or of guano preceding the fruiting is very helpful to the crop.

Thinning fruit is one of the things that amateurs should accustom themselves more to do. Experience is the best instructor. If you have never done this try at least a small number of plants or trees this year, thinning the fruit of different ones in different degrees, and note the effects.

THE VEGETABLE GARDEN.

Beets, for the main crop, should be sown about Corn planting time. We drill ours in lines fifteen inches apart. The early sowings should be thinned as needed.

Carrots. Directions for Beets will apply.

Celery seed beds should be kept weeded, and the plants thinned where standing too thickly.

Cucumbers may be grown in vacated frames and hot-beds, planting the seeds or such plants as have been started inside, giving protection with glass at night for some time to come.

Dandelion. This favorite early "green" may easily be raised in the garden from seeds sown now.

Egg Plant. This vegetable delights above all else in heat, requiring a temperature of 70° to 75°, and to be kept growing, without check, from the first, and not planting out earlier than June first. Guard from the Potato bug, which has a great relish for the plant.

Herbs may be sown early this month, either for transplanting, or where they are to grow. The varieties usually sown for market, growing them after early Cabbage is gone, are Summer Savory, Thyme, Sage and Sweet Marjoram. Herbs require a moderately strong soil, with good tillage.

Hot-beds may be turned to good account later by clearing several spots in each one now, and sowing Cucumber or Melon seeds to take possession later.

Lettuce. The early sowings may be dibbled out into rich soil at 12 to 15 inches apart for heads.

Melons, Squashes and the like, being rank feeders, should be planted in manured hills; six feet apart is a good distance.

Rhubarb should have the flower stalk broken out. Do not take cooking stems from newly-set plants.

Savoy Cabbage is by many thought to be superior to the ordinary sorts. Treat like any other Cabbage. The Drumhead Savoy we think is the best variety, the head being large and solid.

Sow the more tender things, like Beans, Corn, Cucumbers, Melons, Squashes, Tomatoes, Martynia, as soon as the ground is well warmed. Also for succession crops, Lettuce, Radish, Spinach, etc.

Squashes. See directions under Melons.

Sweet Potatoes. Plant from the latter part of May until July 1st in well prepared narrow ridges three and a half to four feet apart, the slips 18 inches apart. The ridges may be suitably made by first scattering superphosphate or old well decayed manure along the line and afterwards throwing a narrow ridge of soil over this on which to set the plants. Keep clean of weeds until the vines begin to run freely, then hill up.

Weeds. Keep them down from the first. When small they are easily eradicated; not so after they are strong.

FRUITS AND VEGETABLES UNDER GLASS.

Cucumbers in frames cannot have too much sun and light. Ventilate with caution, and be prepared against cold nights by plenty of covering.

Grapery. Vines in cool houses should again be thinned, being careful not to handle the berries. Early crops that are hastening on towards ripening should be kept rather dry, and with a temperature of 70° with sun heat, or 65° by night.

Peaches. When forced fruit begins to soften for ripening, syringing may be almost wholly stopped and water at the roots considerably reduced. As for gathering, every Peach should be removed before ripe enough to fall from the tree, placing in shallow boxes, in a dry, airy room, until fit for use.

Pines will now be in their season of strong growth. Use water freely about the walks, and in wetting down the plunging material. Although the sun now supplies most of the heat, the fires cannot be got along without; they may be kept banked much of the time.

Strawberry plants that have been forced may be planted out. Soak the balls, ram the soil hard, mulch with old manure, and water if dry weather prevails.

POINTS ABOUT POULTRY.

Combined Wire and Picket Fence. As a means of excluding the poultry from the flower and vegetable garden, we have found that a few rods of this kind of fencing, properly applied, has made the cultivation of flowers on our Iowa farm a source of delight, as well as a means of grace. —The Farmer.

Cause and Effect. Have your hens been laying well? If not, perhaps the cause may be, as it often is, a want of a variety of food. Change it as often as possible; give a liberal supply of wheat, and don't forget to add vegetables and meat three times a week to the bill of fare. Give up the use of corn at this time.

Sulphur for Destroying Insects. A good way is to take an iron vessel with a quantity of live coals in it, carry it to the poultry house, empty a pound package of the flowers of sulphur on the coals, go out and shut the doors and all other openings. The fumes of sulphur are equally deadly to all animal life, so that the regular occupants must be previously excluded.

Glass in Poultry Houses. It is a common mistake to have too many windows and to have them too much in the upper part of the building. The roosts should be high, so as to get as much warmth as possible. Warm air remains always near the top of a room, and for poultry I do not want much ventilation in winter. If the window is near the top the outside air quickly cools the glass, which takes all the warmth from where it is needed. We might remedy this by putting in double frames with air spaces between the glasses. Philadelphia Press.

Perches and Rests. Have them so constructed that we can get at and destroy the mites of the warm season. The best perch I have tried is similar to a carpenter's saw-bench. The rail should be a 2x4 inch scantling, rounded on top. Make the legs of 1x4 inch strips, 2½ feet long. Bevel the ends that are fastened to the rail so that the lower ends of the legs will be spread 18 inches. For nests use soap boxes cut down to 12x14 inches square, and 10 inches deep. Hang them along the sides of the houses, or else place on a bench raised a little from the floor. This gives the fowls all the floor space.—Ohio Farmer.

Cramp in Fowls. This disease of young chicks is chiefly due to dampness. Birds affected show cramp in the feet, and the toes curl up so that they cannot spread them out. Then the whole leg is affected and they walk upon their ankles. Apparently they are otherwise in good health. The first sign is a little lameness in walking, and as soon as this is noticed they should be removed to a dry boarded floor covered with straw, and kept there until better. As a curative, foment the legs well with hot water, and if the birds are large enough, put strips of flannel as bandages around the legs and feet. If this does not speedily effect a cure, rub the legs with turpentine and put near a warm fire at night. The food will need to be good and stimulating. By giving very dry coops and plenty of fine, dry soil or ashes in the houses and sheds, much can be done to prevent the disease.—American Cultivator.

Cheap Poultry Food. The following ration recommended by the Farmers' Magazine combines meat and vegetables at a small expense. Take a piece of liver, rough beef, or even blood, about a pound, and boil it well in half a gallon of water, adding half a pint of soaked beans, the same of rice, and the same of linseed meal. When the whole is cooked, add a bit of salt and thicken to stiff dough, with two parts ground oats, one part bran, one part middlings, and one of corn-meal. If it burns a little no harm will be done. Curds, buttermilk, or milk in any other shape may also be used. When boiling, add a teaspoonful of bread soda to the water. This food may be cooked in the shape of cakes, and crumbled for the fowls, and fed soft. Just before adding the ground grain, chopped clover may be placed in the boiler also. Another ground mess is to chop clover very fine and steep over night in boiling water. In the morning let the water come to a boil and add a quart of fresh bullock's blood to each gallon of water, thicken with mixed ground grain as before, and feed. Condiments, such as red pepper, ginger, etc., should be fed sparingly. All soft food should be slightly salted, as salt is essential to poultry. Always provide plenty of clean drinking water.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of improvements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

688. **Sowing Strawberry Seeds.** Please tell how, as I have ½ oz. to plant this spring.—W. A. H., *Bay Co., Mo.*

689. **Roses; Treatment and Temperature.** My collection consists of Perle des Jardins, Bride, Niphetos, Bennett, American Beauty, La France, Mme. Cusine, Mme. De Watteville, Brabant, Gloire de Dijon, Safrano, Bon Silene and Sunset. (1) Should I, an amateur, plant them outside for the summer or on the greenhouse table to prepare them for winter bloom? (2) I have three houses of about 65, 55 and 45 degrees night heat respectively, which house would be the best for them, or should they be divided around, and if so, which varieties for which house?—E. K., *Orange Co., N. Y.*

690. **Lawn on Weedy Land.** A yard about 100 feet square and infested with the ordinary and rat tail plantain I desire to make a lawn of. Would you advise cultivation this year to get rid of same? Please give method of making a lawn.—J. H. M., *Boyd Co., Ky.*

691. **Mulberries for Profit.** Is this fruit profitable to raise. Which is the best, Russian or Downing's Everbearing?—J. C. C., *Otsego Co., N. Y.*

692. **Shortening Hardy Rose Bushes.** The bushes in my garden are about 4 feet high, and I want them not over 2½ or 3 feet. How should they be cut for effecting this.—E. D. J., *Salem, Mass.*

693. **Fir Tree Oil.** This insecticide recently recommended in your paper is not kept by our druggists. Where is it procurable?—SUBSCRIBER.

694. **Evergreens for Texas.** Will some one give a list of Evergreens suitable for this State. The thermometer rarely goes as low as 6°.—N., *Abilene, Texas.*

695. **Propagating Cut-leaved Maple.** How should Wier's Cut-leaved Maple be propagated. If by grafting or budding at what time and in what stock?

696. **Propagating Weeping Trees.** On what stocks are Weeping Willows, Elms and Ashes increased? Can you recommend a book on propagation?—W. H. N., *Shelby Co., Ill.*

697. **Putting up Currants and Gooseberries.** Will you give some of the best methods for putting up these fruits for market?—E. W. N., *Houlton, Maine.*

698. **Started Cucumbers Fairly.** I planted them on squares of clayey turf overspread with sand, and covered with sand. They were started near the kitchen stove; grew tall and of good color, but soon one by one wilted, fell over and died. No signs of insects. What was the trouble?—J. L. P., *Union Co., N. J.*

699. **Market Peaches.** What varieties, new and old, would you advise me to plant on sandy soil for a succession from August 1st to the end of season?—J. R. A., *Philadelphia, Pa.*

700. **Non-sprouting Plum Stocks.** Are there any Chickasaw or Native Plums that are free from the objection of sprouting? The Myrobolean does not sprout like the natives, but it is not quite hardy.—E. P. H., *Sterling, Kansas.*

701. **Cucumber Pickle Making.** How are Cucumber pickles made, and in what sized barrels done up for the New York and Boston markets? What varieties are grown? I would be glad for full instructions.

702. **Market for Hoarhound Herb.** Is there any sale for this herb, if so who buys it and at what price?

703. **Leading Snap Bush Bean.** What is the leading market variety?—E. C. B., *Lanark, Ill.*

704. **Glass for Palm House.** What kind of glass is to be preferred for a Palm house? Is ground glass the best?—A READER, *Stamford, Conn.*

705. **Practical Strawberry Forcing.** I wish you would give plain, practical directions on this subject looking to profitable culture in hot-beds or artificial heat otherwise.—N. A. C., *Melrose, Mass.*

706. **Bartlett Pear Planting.** What is the closest this variety can be planted on a clayey soil of only moderate fertility? Being reputed to be an upright grower may it not be closer set than spreading sorts?

707. **Winter Apple for Northern Ohio.** Will you name the best variety? Soil rather a thin clay, low, but surface drained.—H. B., *Cuyahoga Co., Ohio.*

708. **Non-blooming Oxalis.** I want to know why my bulbous Oxalis don't bloom in winter? If I water them in the pots about September they bloom, but they should do so in the winter. I keep them perfectly dry in summer.—A. L., *Cleveland, Ohio.*

709. **Time for Shrub Pruning.** Of a general collection, which should be pruned in the spring and which not?—C. M. L., *Erie Co., N. Y.*

710. **Injured Morning Glories.** How can I prevent the worm from making a home in my Morning Glory blossoms and destroying the seed? From hundreds of blooms last year I could not save a seed.—Mrs. S. N. S.

711. **Propagating Clematis.** (a) How are the large-flowering varieties propagated? (b) If from cuttings would such as are grown under glass be best?

712. **Clematis Under Glass.** Would the plants do well trained up the inside wall of a Grapery?—A. B. D., *Farvellville, Va.*

713. **Orchard on Undrained Land.** The trees, consisting of Apple with Peach half way between, have just been set. Soil inclined to hold water, and is nearly level, with not fall enough to drain it. Can you give any practical method, not too expensive, of treating it? A. B., *Bullitt Co., Ky.*

714. **Eradicating Willow Roots.** How may this best be done from a patch used several years for growing Willows for manufacture?—ESS S. KAY.

715. **Heating With Natural Gas.** Will some one with experience give the method for using natural gas to heat a greenhouse with? Would a specially constructed house be best?—C. M. N., *Anderson, Ind.*

716 **Blackman Plum Bearing.** Can some one tell me if this variety will bear or not? I have 130 planted and am anxious to know.—E. H. B., *St. Louis, Mo.*

717. **Chinese Lily Treatment.** Mine have bloomed in water. Should they be planted out for the summer, and if so when should they be taken up for winter blooming?—H. L. T., *Cameron, Mo.*

718. **Wallflower Culture.** When should the seeds of these plants be started for blooming plants next year?

719. **Mulching Newly-planted Trees.** The advice to practice this is constantly given. Will you give some instructions to A NEW BEGINNER?

720. **Early Tomatoes. Resin Cup.** How do you prepare the resin paper for cylinders recently referred to? Is the seed sown directly in the cylinders or transplanted to them?—W. E. T., *Evergreen, Ala.*

721. **Raspberry Picking.** What is the best device for pickers to use to pick Raspberries in?

722. **Tomato Shipping Package.** What is the best package to ship Tomatoes in? What is better than one-half bushel Peach baskets?—A. M. N.

723. **Guano Query.** I would like to have such light on the general value of this fertilizer as you could give. I am interested in fertilizers, but have never used this. C. C. S., *Olean, N. Y.*

724. **Herbaceous Plants from Seed.** I desire to increase my cultivation of these and am in need of information on the subject.—Mrs. C. G., *Harrisburg, Pa.*

725. **Planting Evergreens in Texas** When is the best time to set these in our country? How would the White Pine do here?

726. **Book on Nursery Management South.** What is the best book in this line for a new beginner?—L. J. B., *Young Co., Texas.*

727. **Wood Ashes for Plum and Peach Trees.** Are such ashes leached or unleached good to mix in the soil of the hole when setting these trees; if so, how much?

728. **Salt for Grape-vines.** Does salt have value as a fertilizer for the vine, scattering it on top the soil?

729. **Bark Coming off Apple Trees.** What causes this in patches to come off in the crotches of the trees, the wood turning black, and what is the remedy?—J. B. A., *Oakland Co., Mich.*

730. **Fragrant Herb.** The enclosed herb of delicious odor I would like to have named. It is easily grown and retains its perfume for years. If it has a market value I would like to know. SUBSCRIBER.

731. **Gladiolus Query.** Will you please give names of varieties used in producing the Lemoine Hybrid Gladioluses, and oblige B.

REPLIES TO INQUIRIES.

583. **Variegated Umbrella.** The tree usually known in the South as Umbrella Tree is *Melia azedarach var. umbraculiformis.* A variegated leaved form is offered. If this is the tree inquired about by your correspondent, the treatment is the same as for the plain leaved form, but it is a weaker grower.—W. C. STEELE, *Switzerland, Fla.*

655. **Oleander Culture.** Every other year will be sufficient for changing the soil, and the operation should be performed before the plants are placed outside for the summer.—C. E. P.

657. **Ailing Begonia.** Nothing can be done to restore the plant to its former beauty and you had better throw it away and start with fresh young plants.—C. E. P.

673. **Downing Mulberry.** The tree is perfectly hardy in this vicinity, and should be in your state.—C. E. P.

678. **French Daisies from Seed.** These plants can be grown from seed, but many of the plants will produce small and inferior flowers. You had better purchase a few plants of the several varieties and increase your supply by cuttings, which will root very readily at this season of the year. Plants can be procured of John Saul, Washington, D. C.—C. E. P.

683. **Marechal Niel Rose-Buds Decaying.** The trouble is caused by growing the plant in a damp, cold atmosphere, a plant in the condition you speak of requires an average temperature of from 56 to 60 degrees.—C. E. P.

665. **Leached Ashes for Strawberries.** Your past experience should be your best guide. For orchard and meadow I would suggest a trial on a small scale.—C. E. P.

683. **Fir Tree Oil.** It is offered by Peter Henderson & Co., 36 and 37 Cortlandt St., New York, and we think by some other dealers in horticultural requisites.

617. **Grafting Several Sorts on the Same Tree.** In Paso Del Norte and in El Paso, (this side of river), two Mexican Seedling Pear trees over 100 years old, were three years ago grafted with seven kinds of Pears on one, and nine on the other. All bore perfectly last year on the grafts and they had to be thinned to save breaking limbs. All did remarkably well.—I. WESTON, *El Paso, Tex.*

699. **Succession of Peaches.** For an all-season succession of Peaches, suitable for market, for the latitude of Philadelphia and southward, the following are suggested, giving in figures the per cent of each which might be found most desirable for marketing purposes. Early Rivers, 2; Foster, 2; Crawford's Early, 2; Mountain Rose, 5; Wager, 2; Moon's Favorite, 7; Old Mixon, 15; Crawford's Late, 12; Stump the World, 16; Fox's Seedling, 10; Brandywine, 5; Shipley's Late Red, 2; Beer's Smock, 15; Stephen's Late, 2; Wilkin's Heath Cling, 2; Bilyeau's Late October, 2.

716. **Blackman Plum Bearing.** The general verdict against this Plum as a poor bearer is very damaging. So good an authority as H. E. Van Deman, United States Pomologist, says it has never yet blossomed or fruited in any nursery he knows of, and that honest nurserymen should burn every tree they have. We know of some trees grown for ten years that have never fruited.

700. **Non-Sprouting Plum Stock.** I don't know that there are any such, but do know that most seedlings if left undisturbed, and no roots cut, will become large trees without any trouble in that way. But we can get ahead of this matter by growing the Marianna from cuttings and use it as a stock. It is a vigorous grower, quite hardy here, where the mercury gets down to 30 degrees below zero, is easily grown from cuttings as a native almost. My impression is that this is its greatest value, unless it proves better hereafter than it has thus far.—S. MILLER.

648. **Myrobolean Plum Stock.** In regard to Myrobolean as plum stock I have used it and find it is not quite hardy, does not sprout like our native plums.—E. P. FISHER, *Rice Co., Kansas.*

659. **Gladiolus Query.** *G. ramosus*, the Branching Gladiolus is by some considered to be the finest species of the genus. In favorable situations the flower stem grows about five feet in height, and the plant produces a succession of flowers from June until August. The individual flowers are very large and of a rosy blush color with heavy carmine stains on the three lower petals. Introduced from the Capes. *G. Gandavensis* is of obscure origin. It was claimed by the late Louis Van Houtte that it was a cross between *G. pottacinus* and *G. cardinalis*; but most of the English writers dispute the fact. Still from it all of our fine garden varieties have originated, as it crosses freely with all the other species.—C. E. P.

674. **Asparagus tenuissimus.** The plant evidently has been improperly treated, and your best course will be to turn it out of its pot, and repot in as small a pot as possible, using fresh compost, and when growth commences shift on into larger pots. If you will adopt the following method there will be no trouble in growing this plant. It should be given a porous or soft-baked pot, one proportionate to the size of the plant, and a compost composed of two-thirds turfy loam, and one-third well decayed manure. Good drainage is also essential. During the plant's season of growth it should be given liberal supplies of water both overhead and at the roots, but when at rest water should not be so freely given. Still at no time should the plant be permitted to become absolutely dry. A light situation and an average temperature of from 55 to 60 degrees are required during its season of growth.—C. E. P.

690. **Lawn on Weedy Land.** To start such a lawn on such a Plantain infested plat as you refer to, it would undoubtedly be best to begin the work completely as regards deep cultivation, manuring, etc., this spring, and then defer the seeding until September, in the meantime destroying with the hoe and by shallow cultivation all weeds that appear. The principal factor to a good lawn is a deeply loosened and well enriched soil. On a plat of some size the surface and subsoil plows are the most economical for securing the former condition; on a small plat the spade may take their place. A depth of culture reaching 15 inches is desirable, while to go even deeper would be an advantage. In all cases the top layer of soil should be kept at the top. Before sowing the seed the surface should be made smooth and regular.

612. **China Tree.** Melia azedarach is not quite hardy here in Southern New Jersey and would not succeed in the open air without protection much further north. I have one three years planted which killed to the ground the first winter, the second winter two feet remained alive, and some three or four feet appears to be alive now. By a heavy mulching with leaves and Pine boughs you could probably grow it as a shrub, cutting it down every spring. Sometimes tender trees suffer less when grown slowly. Some twenty years ago I planted a Pawlonia imperialis in my garden and at the same time planted one for a neighbor in a very poor, dry grass-plot. Mine made a growth of 8 to 10 feet per year, but has seldom bloomed much and has suffered badly in cold winters, and now has but little life in it. The one in turf grew very slowly for ten years, looking half starved, but retained its growth and now blooms full almost yearly.—W. F. B.

622. **Pears on Light Soil.** Bartlett Pears succeed best in our lightest soils, and our light soils are very sandy, but the sand is not fine. They grow fairer and color better on such soils.—W. F. B.

664. **Apples Falling Prematurely.** The dropping of the fruit is most likely caused by the larva of the insect known as the codling moth. The perfect insects, which are small moths, appear in the greatest numbers on the warm evenings which we usually have about the first of June, and lay their eggs in the blossom ends of the small fruits. In a short time these eggs hatch, and the worm eats its way until it reaches the core, when the fruit ripens or drops off prematurely. Then the insect leaves the fruit and creeps into the crevices underneath the rough bark or other hollow places on the tree and spins its cocoon. Here it remains until next June when it emerges a perfect moth. As a preventive gather up and destroy all fallen fruit daily, and clean the tree by scraping and washing the trunk and large limbs. It is said that if a strip of woolen cloth is tied around the trunk of the tree as soon as the fruit commences to fall the worms will collect underneath it and in this way may be caught and destroyed.—C. E. P.

666. **Violet Culture.** As soon as the plants cease flowering they should be divided or separated into smaller ones of one good crown each, and planted out in rows 15 inches apart, the plants standing one foot apart in the row. They should be given a deep, moderately enriched soil, and planted out as early as possible, so that they may become well rooted before hot dry weather sets in. After being planted they will require no care until September, except to keep them clear of weeds by frequent hoeings. After the first of September the plants should be carefully examined and thinned out to six or eight crowns, and all runners removed. In the course of two or three weeks they should be dug up carefully and planted in cold frames or on the benches of the greenhouse, giving them about six inches of ordinary potting soil. Shade and water carefully until the plants become well established, and afterwards air freely whenever the opportunity offers, and carefully remove all yellow or decaying leaves, weeds or runners as soon as noticed, to admit air to the plants. For early blooming the plants must be placed where they can be given an average temperature of from 45 to 50 at night. For late or spring blooming they should be grown in cold frames, where they will require the treatment usually applied to cold frame plants. For propagation I would always choose those plants that have been grown and flowered in a cold frame.—C. E. P.

675. **Bark Lice.** Your trees are infested with what is known as the bark louse. To destroy them dissolve two pounds of potash in two gallons of water, and apply with a paint brush to all infested parts, or better yet to all the stems and branches of the trees. This can be applied at any time, but it is best done in the spring before the buds start. One, or at the most two applications will be sufficient.—C. E. P.

677. **Manure for Flowers.** There will be no danger in a free use of manure for Geraniums, Carnations, etc., provided it is thoroughly decayed, well pulverized and thoroughly incorporated with the soil.—C. E. P.

667. **Forcing Lily of the Valley.** The crowns or pips used for forcing are imported from Europe by seedsmen and florists during the autumn months. These crowns or pips are placed in shallow boxes, rather thickly together, using ordinary potting soil, then they should be placed in a cool, moist situation until well rooted. On the approach of cold weather they should be placed in cold frames or cellars, so that they can be easily procured when wanted. When it is desired to force them water thoroughly, and very gradually increase the temperature until it reaches 70°. Keep the boxes in a shaded situation until the flower spikes show.—C. E. P.

704. **Glass for Palm House.** Yes, for the roof at least. And if the structure is to be devoted entirely to Palms and other shade-loving plants as Ferns and Marantas it may also be used for the sides; but if Crotons, Ixoras and other tropical plants that love light, though not full exposure to warm sunshine, are to be grown in it, better glaze the sides with clear glass, and, when necessary, use temporary shading material.—W. FALCONER.

705. **Practical Strawberry Forcing.** Secure the earliest and strongest runners and layer them into 4-inch pots sunk into the ground. When the pots are full of roots and the layers vigorous, sever them, and remove them to a cold frame or some place handy where they can be plunged together, well watered and kept in active growth. In a week or two repot into 6-inch pots, plunge as before and keep growing. And keep them in the most active and vigorous condition until they show signs of starting. Keep them over winter in a cold frame. A little frost and snow wont hurt them. Only protect them enough to keep the frost from bursting the pots. For fruit to ripen before Easter use greenhouses; after that time either glass houses or hot-beds. In forcing Strawberries must be kept near the glass, and have sunshine and ventilation, plenty water and room. If the flowers don't seem to set help them with a camel's-hair brush. They will do well in a light, airy house, with a night temperature of 60°.—W. FALCONER.

715. **Heating with Natural Gas.** No special construction of a greenhouse is at all necessary. I heat about ten thousand feet of glass with 2 5-32 meters, using two 2-inch T burners. I use steam for heating, the same being generated by the gas, and could just as well heat a third more space with the same quantity of gas. It is safe, cheap and reliable, here in Pennsylvania at least. The actual cost of gas is about the same as soft coal, but the great saving of labor, freedom from soot, dirt and dust, flue cleaning, etc., makes it a boon to the florist. It can be used in a good brick flue to just as good advantage as in a boiler. The supply or flow can be regulated so as to have absolute control of the temperature in the coldest weather. Gas is being successfully used in a number of flues in and around Pittsburgh. ALBERT WILLIAMS, *Mercer Co., Pa.*

665. **Leached Ashes for Strawberries.** I never tried leached ashes on prairie land, but would haul them five miles and pay 50 cents per load for orchards and Strawberry beds, unless they were *too badly leached*, a thing quite possible.—S. M.

691. **Mulberries for Profit.** Mulberries are not classed among fruits that are profitable to grow for market, indeed we have never seen the fruit offered for sale. Of the different sorts the Downing, or Everbearing, is considered the most desirable for its fruit throughout the Northern States. It is greatly superior to the Russian in this respect. The fruit of the former is agreeable to the taste, being juicy, sweet and sprightly, but that of the latter is rather insipid. A tree, or several trees, of the Downing, if planted on the home grounds, would be found desirable for the fruit for eating. Birds are fond of the berries of all varieties, hence on their account some Mulberries would have the effect of lessening the loss of more desirable products.—A. H. E.

664. **Apples Falling Prematurely.** This may have been caused by a too vigorous growth of the "wood buds." Where a tree grows in an upright or perpendicular direction the tendency of the sap is to the extremities of the limbs or terminal shoots, which use up the larger part of the sap, leaving but a little for the side branches. This means short life to them. Now when the life of a tree or limb is threatened, the natural tendency is for it to produce seed, but in this case the terminal shoots used up so much of the sap that there was not sufficient left to carry the fruit through to maturity. A remedy would be, when the tree is in bloom, to take off a ring of bark one fourth inch wide all the way around the trunk of the tree. This will check the flow of sap and throw the forces of the tree into fruit instead of wood. By autumn the wound will be all healed over, if care is taken to prevent the entrance of borers where the bark is separated. Generally when a tree has once borne a full crop there will not be any need of repeating the operation, as the limbs will become more horizontally inclined, thus checking the flow of sap with their own weight. The above result may be produced by tying down the limbs, or tying on weights.—W. C., *Middlesex Co., Mass.*

682. **Laying Out Steep Front Yard.** We present a sketch (printed on page 171) for laying out a steep front yard that we think might, with slight variations, prove of use to you. The idea is to have winding walks, which in themselves would serve as a check to the free flow of water, say nothing of the greater length over which it would be distributed. In steep walks, as these at some points might be, it is well to insert some half-steps across the path, both to intercept the flow of water and to make the ascent and descent easier. Such steps may consist of pieces of plank eight inches wide and half sunk into the gravel, keeping the upper surface level or a little higher at the outer edge. To keep the steps in place on a steep incline a stake should be driven in at each end to support them.

687. **Lady Washington Grape.** The Lady Washington Grape appears quite hardy and productive. The bunches are large, well formed and attractive. The quality is very good. Unfortunately it is a little too late for the climate of Geneva.—E. S. G.

671. **Bagging Grapes.** Paper bags are most commonly used for bagging Grapes. They should be large enough to enclose the largest bunches. About eight inches long by five in width. The paper does not need to be very heavy. It is customary to cut off one of the lower corners of each bag in order to prevent the accumulation of water within it. The bag should be put on soon after the bunches are out of blossom. They are usually fastened by folding one corner down and fastening it with a pin. Where it is desired to inclose only a few bunches it is unnecessary to procure bags, as pieces of newspaper, folded about the bunches and fastened with a pin, answers the purpose very well. Inclosing the bunches improves their appearance much, as it preserves the bloom. It also protects them in a measure, at least, from rot, as well as from hailstorms and early frosts. It is unquestionably worth the trouble for the amateur, but whether it will pay from an economic standpoint has not been so well settled.—E. S. G.

617. **Grafting Several Kinds on the same Tree.** Several varieties of Pears and Apples can be grown on the same tree to good advantage, but it is desirable to understand the habits of growth and productiveness of the varieties used, and graft those which are about equally productive on the same tree, as otherwise those most inclined to bear are likely to appropriate the vital power of the tree to the disadvantage of the others, and those which are upright in growth should be at the top, while those of spreading habit may be grafted lower. W. F. BASSETT.

638. **Hen Manure for Grapes.** Hen manure should be applied like other animal manures, except that, being much stronger than stable manure, a much less quantity is required, but no manure should come in contact with the roots of trees or vines newly planted, unless previously well decomposed. A little may be thrown in the bottom of the hole and covered with earth before putting in the tree and a little after the roots are covered, or it may be dug into the surface after it is planted. Do not mix ashes with it unless it is to be covered immediately, as the ashes will set the ammonia free and it will be lost.—W. F. B.

723. **Guano Query.** Perhaps no other fertilizer is by name more familiar than this, owing to the fact that the article or frauds on the article have been much advertised for years. Concerning its source of supply, Professor Wyatt says that the principal stock has been derived from Peru, Chili, Bolivia and the South Sea Islands. The deposits proceed from a species of sea fowl known as Guanoes, which feed upon the small fish that swarm the waters near the coast. The high percentage of nitrogen contained in the Peruvian shipments of former years must be attributed to the absence of rain, which characterizes that country; those arriving from other regions having lost a considerable portion of their ammonical salts through the action of the water. There can be no doubt that, for a considerable length of time after its introduction, very marvelous effects followed the application of manure, but the enormous and continual drain upon the production, and the never-varying result of speculation and jobbery, would seem to have told a tale upon it, and the quality is now of a very variable nature, with a tendency to become more and more so, as time goes on. The trade in Peruvian guano is monopolized by the Peruvian government, and the immense deposits sometimes attain a depth of one hundred feet. The value of real guanos from all sources is estimated upon the basis of their nitrogen, ammonia, phosphate and organic matter, and when of sound quality they have generally realized from $65 to $75 per ton. To show how unreliable is the quality of the product at the present time, Mr. Wyatt gives an instance of the analysis of two cargoes purporting to be of the same quality and shipped from the same port at the same time, and in which the nitrogen varied from 15.30 per cent in one cargo to 2.70 per cent in the other, and soluble phosphate of lime from 6.76 per cent to 0. per cent respectively. As these are pronounced far from exceptionable instances, we feel compelled—while admitting that no better manure than *good* guano is to be found—to advise the discontinuation of their use until shippers guarantee them to contain a stipulated minimum percentage of the active principles.

624. **Dog Nuisance.** I can see no good reason why dogs should be allowed to run at large any more than horses and cows, and I think public sentiment will sometime require that they should be kept on the owner's premises. Those who have dogs that are of any real value can afford to take care of them, but a large proportion of them are of no earthly use, except to breed fleas, run over crops, steal everything within their reach, and bark at every passer-by, and the sooner they are got rid of the better. If your neighbors have valuable dogs that trouble you, perhaps it would be best to enclose your garden with a wire fence, using such as is used for hen yards and this will also exclude fowls, if any run at large; but if it is the worthless sort that do the mischief, a little strychnine on a bit of meat is a pretty sure remedy. It requires care, however, not to kill valuable dogs or cats, and it is best to warn your neighbors who have such to keep them fast, and keep your own in.—W. F. B.

720. **Early Tomatoes; Resin Cups.** To prepare the paper for cylinders, two pounds of resin is melted in one ounce of boiled linseed oil, the mixture to be applied while hot with a cloth swab on a light weight of paste-board. We would not advise sowing the seed directly in the cylinders, but rather to first transplant from the seed beds into boxes holding about one hundred plants one and a half by two inches apart, then as they begin to crowd put them into the paper cylinders, to grow until planting-out time, when, if the treatment has been suitable, the stocky plants will be had. The above mixture must become hard when on the paper, but should have oil enough to prevent cracking when rolled, and as the quality of rosin varies, so the right proportions for each case can only be found by experimenting. A resinous building paper can be secured at most hardware stores, which perhaps would answer the purpose as well, with no greater cost.—ELMER E. SUMMEY.

717. **Chinese Lily Treatment.** We presume by "Chinese Lily" you mean *Narcissus Fasetta var.* If they are still in the water fill up the vessel with earth, then drain off the water so as to leave the earth in a moist lump, which can be readily transferred from the vessel to the garden ground. Plant in this way in a shady, sheltered spot, and don't disturb the bulbs for a year or two. They will now be so enervated as to be of little use for winter-forcing next winter.—W. F.

535. **Draining the Orchard.** We think it would be unsafe to set the trees before draining. For leisure is uncertain help, coming as it usually does (if at all) to the back door, weary from a long journey, seeking rest. If the slope of the land admits of drainage (otherwise the work would be useless), make the drains the same distance apart that you wish to set the trees. Then put the ground in good condition, as for a crop of Corn; get your trees from a local nurseryman who can vouch for their correct naming, and set them in a workman-like manner midway between the drains, stake and mulch them, and continue your acquaintance with them by good cultivation, as though they were something which you love, and take an interest in giving them if possible a yearly dressing of wood ashes and ground bone. Then you may expect to enjoy some of the fruit before the coming generation takes your place.—SUBSCRIBER.

719. **Mulching Newly-planted Trees.** All such are benefited by a layer of manure being laid on the soil immediately over the roots before the heat and drought of summer comes, and the larger the trees the more necessary it is to take care of the roots, for if the roots can be kept right the branches will be able to take care of themselves. Trees that are to receive this attention should have it at once, and if the soil is at all dry round the roots it should be well watered before the mulch is laid on. Newly-planted beds or borders of shrubs should have the whole of the surface covered. Single specimen trees standing on grass in positions where both the sun and air can play on the soil over the roots should have a thicker layer than small shrubs which stand nearer to each other. Good half-rotten manure should be used in preference to any other material when available, but where it is not tan or short grass may be used with a fair measure of success. It must not be understood that mulchings of any sort will render any further waterings unnecessary. It will not do that, but it certainly will lessen the quantity required to keep the soil moist in periods of prolonged drought, and what is equally as important, it will prevent, to a certain extent, the evaporation from the soil of the moisture which is applied to it, so that the sod will be more uniformly moist for a long time after it is watered than would otherwise be the case. When it is found necessary to give further watering to any thing that has been mulched it is a very simple matter to draw on one side the material and replace it again when the watering has been done.

718. **Wallflower Culture.** To ensure strong plants for flowering next year, sow at once in the open border, and transplant when large enough to a bed in which they can remain until the autumn. The mistake is frequently made in the cultivation of Wallflowers of deferring the sowing of the seed until the summer, with the result that the plants are not strong enough in the spring following to bloom satisfactorily.—A. H. E.

730. **Fragrant Herb.** This is Sweet Basil (*Ocymum basilicum*), a deliciously fragrant plant, an annual, and well worth growing among mixed plants in the flower border. Of the easiest cultivation, but of no commercial value.—W. F.

731. **Gladiolus Query.** The Lemoine Hybrid Gladioluses are hybrids between purpurea-auratus and Gandavensis, or some of its numerous varieties.—C. E. P.

A Manure-Heated Pit.

L. L. ESENBERNER, BERKS CO., PA.

We enclose a sketch of a forcing pit which we have in use. It is in fact a greenhouse, depending on the slow combustion of fermenting substances for its heat instead of fire. The walls you will note are built of brick, for although costing more to build, such will outlast many wooden structures.

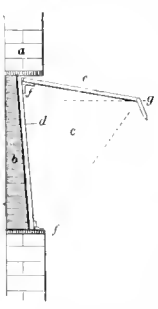


Fig. 2. The Manure Hole and Shutter.

The back wall is four feet above the level of the ground, and forms the southern fence of the barn yard. The pit measures ten feet from front to back wall, inside measure, the roof is composed of sash, the same as an ordinary hot-bed.

There are two openings in the back wall to throw in fermenting material. The shutters used to close these up when not wanted are somewhat novel, consisting of a frame of some durable wood, (Yellow Pine will do), two feet wide and three feet long. The shutters are fastened in a recess of this frame *b* with the hinges of the inner one *d* below. The top of this one when closed is about six inches above the level of the ground, and to its top is fastened with hinges the outer shutter *c*, so that when the shutter is opened, in the funnel shaped hole dug for it, the upper shutter will lie reclining to the ground. In closing, the inner shutter will describe a circle having the hinges for its center, thus making the upper board look like a cellar door when closed. The design of this is to shed rain, and keep the hole

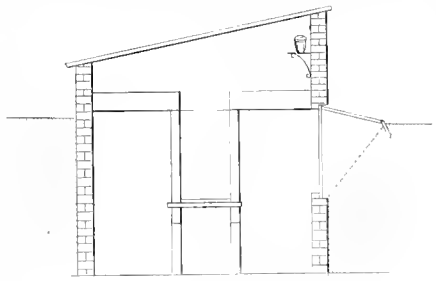


Fig. 1. A Manure-Heated Pit.

from filling with snow, etc. The upper board keeps the shutters closed by slipping over an iron pin driven into the ground at *g*.

The benches are above the level of the outer soil, and the space below is high enough for a man to get under and stand conveniently. The walk is made of two boards each twelve inches wide, and two cleats nailed so as to come one on each side of every post, and rest on blocks fastened firmly to the posts; the boards must be cut the right length so as to end right at a post, and a cleat nailed there. The side boards (to keep the heat under the benches) are screwed to the posts, with the upper one hinged to the lower, and kept in place with a button, so as to readily open and close, as required.

This pit ought to be started early, as it will take some time before enough heat is generated to be continuous; but as all the house manure is to be dumped in whenever the stables are cleaned out, the temperature is steady when once attained.

It might appear at first sight as though a great deal of heat was lost on account of the manure being so far from the beds, but such is not the case, the distance keeping the beds from the first intense heat of the fermenting manure, and as fresh material is continually being added, the heat is kept steady; In the fall the manure is taken out, and will be found in much better condition as a fertilizer than that which has been exposed to the weather; in this alone there is a great gain. This house will give excellent results; can be used for all tank propagating, etc. It would be more economical perhaps to use cloth instead of glass, the house would be kept much warmer at night, and in ordinary cases diffused light is as good as the direct light.

The Adirondack Forests Threatened.

The importance of tree and forest planting in America deserves all the agitation which has of late been bestowed upon it by the press and the friends of trees. But it appears from investigations recently made by Garden and Forest that if special attention is not given to arresting the destruction going on in the Adirondack reserve, that a degree of damage to the interests of the state and nation is likely to follow which no amount of ordinary planting could soon offset. And even if it could, that should be no argument for permitting the Adirondack forests to be wasted; these in their place are needed, while new plantings are necessary for the re-wooding, in a measure, of the cleared-up parts of the country.

As the journal referred to further states: The preservation of the Adirondack forests is a matter of national importance. One of the principal commercial rivers of the world depends upon these forests for its existence; their value as a health resort for people from all parts of the United States is incalculable. Their preservation, therefore, is a matter which concerns the whole country.

Never have these forests been threatened, goes on the same article to say, with such danger as now menaces them from every side. Railroads are being built or are about to be built into the wilderness in every direction. The promoters of the Schenectady and Ogdensburg Railroad Company propose to build a line this summer directly through the heart of the Adirondacks, to serve as a feeder for the Canadian Pacific and bring that road into direct connection with New York and Boston. The Chateaugay Railroad Company is extending its line into the forest. Its last station is only eight miles from Lake Placid and within six miles of Paul Smith's, upon St. Regis Lake. Adirondack Lodge, one of the wildest and most picturesque spots in the whole region, is now but fifteen miles distant from the railroad. The Northern Adirondack Railroad has penetrated through the forest almost as far south as Paul Smith's. Another road runs from Carthage, in Jefferson County, into the forest region to Jayville, St. Lawrence County, and a further extension is proposed.

The building of railroads through a forest in this country means its extermination. This is particularly true of the Adirondack forest. Its escape from extermination in the past is due to the single fact that the hard woods of which it is principally composed could not be got to market from lack of transportation. If transportation is furnished it is merely a question of time when every tree will be consumed in the saw-mill, the paper factory and the charcoal furnace. Railroads will increase, too, the number of forest fires and thus hasten extermination.

There is but one way to save what now remains of the Adirondack forests. The enactment of a law which shall prohibit the location of any railroad under any circumstances upon the State lands which are widely scattered through the entire region will prevent its ruin. No other measure less sweeping in its restrictions can accomplish this. There is a Board of Forest Commissioners in this State. It is the duty of these Commissioners to devise measures for the protection of the State forests and to see that these laws are put into execution. It is their duty to enlighten the people of the State upon the condition of the State forests and the dangers which threaten them.

Have these Commissioners performed these duties?

The only activity displayed, so far as the public is informed, is manifested in their attempt to secure from the present Legislature the passage of a bill authorizing them to lease to "individuals or clubs for pleasure resorts or camping purposes," portions of the public domain for periods not exceeding five years' duration. Authority should not be given to the Commission. It will be impossible to protect the State forests if the Commissioners are allowed this privilege.

The actual condition of the Adirondack forests and the doings of the Forest Commissioners during the three years they have held office need investigation. Much is at stake in this matter. The public must be enlightened and aroused to active interest in the matter; and the concerted and energetic action of the press of the whole country can alone accomplish this.

THE COMPLETE GARDEN.*

XV.

BY A WELL-KNOWN HORTICULTURIST.

EVERGREEN TREES AND SHRUBS.

(Continued from page 160.)

Evergreens as a rule prefer a light porous soil admitting of perfect drainage, and which is in a rich state, not from the application of rank fresh manure, but rather of that which is old and finely divided. If the more delicate and somewhat tender species cannot be given such soil, it is scarcely worth while to plant them, for in any other the growth will not be completed early enough in the season to ensure the proper ripening of the wood for enabling them to endure the winter. If such kinds are planted on slight elevations of soil they are the more likely to do well, because in such situations the early ripening of the wood is the better assured.

ARBOR VITÆ. American, (*Thuja occidentalis*) A.
Siberian, (*var. Siberica*) C.
Upright, (*var. pyramidalis*) C.
Weeping, (*var. pendula*) C.
Geo. Peabody's, (*var. aureum*) H.
Burrow's, (*var. Burrowii*) H.
Parson's, (*var. compacta*) H.
Hovey's, (*var. Hoveyii*) H.
Heath-leaved, (*var. ericoides*) H.
Globe-headed, (*var. globosa*) H.
Hoopes' Dwarf, (*var. nana*) H.
Tom Thumb, (*var. Tom Thumb*) H.
Chinese, (*Biota orientalis*) G.
Chinese Golden, (*var. aurea*) G.

BOX. Common Tree, (*Buxus sempervirens*) F.
Dwarf, (*var. suffruticosa*) H.
Handsworth's, (*var. Handsworthii*) F.
Jackson's Weeping, (*var. Jacksonii*)
Broad-leaved, (*var. latifolia*).
Myrtle-leaved, (*var. myrtifolia*).
Gold-striped, (*var. aurea*) 5.
Silver-striped, (*var. argentea*) 5.

CEDAR OF LEBANON. (*Cedrus Libani*) A-J.
Mount Atlas, (*C. Atlantica*) A-J.
Deodar or Indian, (*C. Deodora*) A-J.
Japan, (*Cryptomeria Japonica*) A-J.

CYPRUS. Lawson's, (*Cupressus Lawsoniana*) A-J.
Lawson's Pyramidal, (*var. pyramidalis*) A-J.
Lawson's Weeping, (*var. pendula alba*) A-J.
Nootka Sound, (*C. Nutkaensis*) A.
White Cedar, (*C. thyoides*) A.
Dwarf White Cedar, (*var. sphæroidea nana*) A.

FIR. Balsam, (*Abies balsamea*) A.
Nordmann's Silver, (*A. Nordmanniana*) A.
Noble, (*A. nobilis*) A-J.
Siberian Silver, (*A. Pichta*) B.
Hudson Bay Dwarf, (*A. Fraseri Hudsonica*)H.

HEMLOCK SPRUCE. (*Abies Canadensis*) B.
Dwarf, (*var. nana*) D.
Sargent's Weeping, (*var Sargentii*) B.

HOLLY. American, (*Ilex opaca*) C.

JUNIPER. Common, (*Juniperus communis*) B.
Canadian Trailing, (*var. Alpina syn J. Canadensis*) H.
American Pyramidal, (*var. Alpina pyramidalis*).
Irish, (*var. Hibernica*) F.
Sweedish, (*var. Suecica*).
Savin, (*J. Sabina*) H.
Tamarisk-leaved, (*var. tamariscifolia*) H.
Variegated-leaved, (*var. variegata*).
Alpine, (*var. Alpina*) H.
Red Cedar, (*J. Virginiona*) C-D.
Gray-leaved, (*var. glauca*) F.
Weeping, (*var. pendula*).
Chinese, (*J. Chinensis*) C.
Reeve's, (*var. Reevesiana*).
Japan, (*J. Japonica*) H-J.
Prostrate, (*J. prostrata*) H.
Lovely, (*J. occidentalis var. venusta*) H.

LAUREL. Mountain or Broad-leaved, (*Kalmia latifolia*) F-G.
Narrow-leaved or Sheep, (*K. angustifolia*) H.

MAHONIA. Holly-leaved, (*Berberis aquifolium*) B.

PINE. Australian or Black, (*Pinus austriaca*) A.
Corsican, (*P. Laricia*) A.
Pyrenean, (*P. Pyrenaica*) A.
Short-leaved Yellow, (*P. mitis*).
Dwarf Mugho, (*P. Mugho*) E.
Dwarf or Mountain, (*P. pumilia*) G.
Jersey, (*P. inops*).
Table Mountain, (*P. pungens*).
Heavy-wooded, (*P. pauderosa*) A.
Sabine's, (*P. Sabiniana*) A.
White or Weymouth, (*P. strobus*) A-D.
Compact white, (*var. compacta*) G.
Swiss-Stone, (*P. cembra*) G.
Pigmy, (*var. pygmæ*) H.

RETINISPORA. Plume-like, (*Thuja plumosa*) G.
Obtuse-leaved, (*T obtusa*) A.
Pea-fruited, (*T pisifera*) E.
Thread-branched, (*var. filifera*) H.
Golden Thread-branched, (*var aurea*) H.

RHODODENDRON. American, (*Rhododendron maximum*) F.
Catawba, (*R. Catawbiensis*) H.

SPRUCE. Norway, (*Abies excelsa*) A.
Finedon Hall, (*var. Finedonensis*) A.
Inverted-branched, (*var. inverta*) F.
Pyramidal, (*var. pyramidalis*) B.
Clanbrasil's Dwarf, (*var. Clanbrasilianus*) H.
Ellwanger's Dwarf, (*var. Ellwangeriana*) H.
Gregory's, (*var. Gregoriana*) H.
Maxwell's, (*var. Maxwelliana*) H.
Conical, (*var. conica*) F.
Pigmy Dwarf, (*var. pygmæa*) H.
White, (*A. alba*) B.
Dwarf white, (*var. nana*) G.
Black, (*A. nigra*) B.
Dwarf black, (*var. prumilia*) H.
Doumets, (*var. Doumeti*) H.
Alcock's, (*A. Alcoquiana*) B.

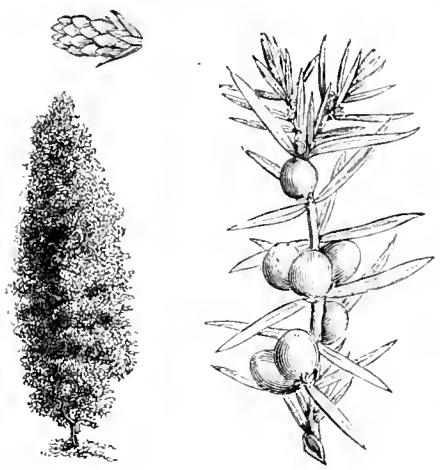


FIG. 46. THE IRISH JUNIPER.

Menzie's or Colorado Blue, (*A. Menziesii*) A.
Douglas, (*A. Douglasii*) A.
Oriental or Eastern, (*A. orientalis*) B. J.
Polita, (*A. polita*) B. J.

UMBRELLA PINE, (*Sciadopitys verticillata*).

YEW. English, (*Taxus baccata*) C.
American or Ground Hemlock, (*var. Canadensis*) A.
Erect, (*var. erecta*).
Golden, (*var. aurea*)
Irish, (*var. fastigiata*)
Japanese, (*T. adpressa*) H.
Abrupt pointed (*T. cuspidata*) G. J.
Japan or Podocarpus, (*Podocarpus Japonica*) C. J.

THE HARDY FRUIT DEPARTMENT.

To neglect the cultivation of an abundance of good fruit on the home grounds would be to render the gardening at once very incomplete. Nor could there be often found any good excuse for such a course in this sunny climate so favorable to the best development of many kinds. Fruits are not a mere luxury but an essential article of healthful food as well. Each family should be provided with such an abundant supply either fresh or preserved that all the members, children included, could have, not merely an occasional feast, but all that they might desire to eat every day in the year. The value of a fruit diet is in no better way shown than by the fact that those who move into newly settled regions usually grow healthier from the date that their fruit plantings begin to bear. Nor should the pleasure and educating influence secured in fruit cultivation be overlooked. The trees serve to adorn the home with bright verdure, sweet and handsome blossoms, and the beautiful luscious matured products. Their cultivation is not difficult beyond what any person of ordinary intelligence, a boy or girl even, can well comprehend, and it is an occupation that directly encourages the pleasure-giving habits of observation and study. Difficulties enough are to be met to stimulate effort but not to discourage. And where the cultivator becomes sufficiently inspired in his work to seek out the best methods, he will be surprised by the amount and variety of products that through high culture he may raise on a limited area of land.

But to grow fruits for pleasure or for profit it must be done on good soil, and by taking good care of the trees. To attempt the culture of fruit trees on poor land is sure to result in disappointment. Trees of all kinds are healthier when in a vigorous condition than when starved and ill-treated. This is a lesson that the American fruit grower has been a long time in learning, but it is a conclusion now abundantly established. Besides being in good condition as regards fertility the fruit garden must also be well underdrained; if it be not so naturally then drains must be provided.

LOCATION. In locating the fruit plat a site somewhat elevated should be preferred to one flat or depressed. Land that slopes to the north will produce the largest fruit, and there is on such a slope less danger of frost injuring the blossoms in the spring than on any other, because vegetation here starts slowly, hence the blossoms with being backward escape late freezes. On a southern slope, however, the fruit will come in earlier and be richer and better flavored; hence in localities not subject to severe late frosts such a site should be considered the preferable one. Frosts, generally speaking, are more prevalent in low lands than on elevated ones. Elevation also tends to promote the better ripening of the wood annually, thus fortifying the trees to that extent against injury in the winter. Very high elevations are to be avoided because of the severe exposure trees here would have to endure. Protection by evergreen or other wind breaks should be provided to all fruit yards if possible.

APPLE. Standard	30 to 35	feet	apart.
Standard, close pruned or in rather poor soil	25	"	"
Pyramids on Apple stock	15	"	"
Dwarf Standards on Doucain stocks	10	"	"
Dwarfs on Paradise stock	6 to 8	"	"
APRICOTS	16 " 18	"	"
BLACKBERRIES, 3 feet apart, in rows	8	"	"
CHERRIES. Standard	18 " 20	"	"
Pyramids on common stock	15 " 15	"	"
Pyramids on Mahaleb stock Dwarfs and Morellos	10 " 15	"	"
CURRANTS	4 " 5	"	"
GOOSEBERRIES	4 " 5	"	"
GRAPES. Moderate growers 6 to 8 feet, strong	10 " 15	"	"
NECTARINES	16 " 18	"	"
PEACHES (properly pruned)	12 " 15	"	"
On Plum stock	9	"	"
PEARS. Standard	15 " 25	"	"
Pyramids	15	"	"
Dwarfs on Quince	10 " 12	"	"
PLUMS. Standards	15	"	"
Pyramids	8 " 10	"	"
QUINCES	6 " 8	"	"
RASPBERRIES, 3 to 4 feet by	4 " 5	"	"
STRAWBERRIES, hill culture	15 " 18	inch	"
In matted rows, 1 foot apart in rows	3	feet	"

In the arrangement of the fruit garden but three forms of placing the growths need generally be considered, namely: Straight rows and the square made up of four, one standing at each corner, and the quincunx or form of five. The difference between the two latter methods is shown in the annexed engraving. The last named method has, for trees especially, the advantage of a more equal distributing over the surface, thus economizing space, and it is more orna-

mental. In some cases these forms are applied directly to the larger trees, with smaller growing kinds then placed in the spaces between with less regard to the rule.

For laying out the quincunx form the handiest way is to begin by setting the outer row, *a d*, with stakes to indicate the trees at equal distances apart. Next hold one end of a line at *a* and describe an arc in the direction of *c*, then from *b* to *c*, The intersection of the two arcs will indicate the place for a stake at *c* where the first tree of the second row is to come. Proceed in the same manner, describing arcs from *b* to *f* and *c* to *f*, and until the stakes are all set for the second row. Having thus secured the location of two rows it will not be difficult to apply the principle over an area of any extent.

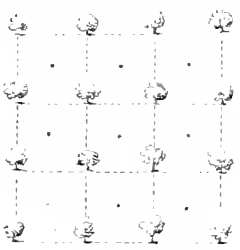


Fig. 47. Trees arranged in Squares.

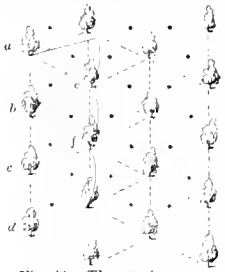


Fig. 48. The Quincunx arrangement.

DISTANCE FOR PLANTING. As a guide in this matter the distances given on page 183 will be of service. Positive rules cannot be laid down because soils, varieties and purposes differ. In rich soil more space is required than in that less rich. Some varieties are stronger growers than others. If one desires to occupy the ground as soon as possible less distance will be needed than if long-lived plantations are designed. The growth of no fruit trees or plants should be so close but that the sun's rays can strike ample areas of ground on all sides.

(To be Continued.)

Professor J. W. Sanborn on Fertilizers.

For the past five years Prof. Sanborn, of the Missouri Experiment Station, has been giving much attention to testing commercial fertilizers. As a result of his experiments he makes some general observations on the subject in a recent bulletin, and which we reproduce here.

While I used chemicals by the car load for years, and am an emphatic believer in their economy for the older sections of the country, I do not believe that the prices of crops in Missouri justify their use, except under well-defined limitations.

Aside from the restraining influences of the cost of chemicals and the price received for our crops, the more important fact comes to sight that the saving of the prevailing wastage of animal excrements will cost but a fraction as much as an equivalent amount of plant food secured by buying chemicals. Events urge the utmost economy of stock manures, and their intelligent use. Let this cheapest of all sources of plant food (that is, cheapest under our conditions in Missouri), be first utilized before we look for costly outside sources.

The market value of chemical manures is determined by their composition, while their economic value is determined by the character of the land and the crop to be raised. The former, or market value, can be ascertained by multiplying the number of pounds of phosphoric acid, potash, and nitrogen found in a ton by the market rates of the elements of plant food contained in the fertilizer. Thus if a ton (2000 pounds) of superphosphate has a stated composition as follows: Phosphoric acid, 10 per cent; potash, 2½ per cent; and nitrogen, 3½ per cent, the following results will be got, at the present rates of these in New York, which are for phosphoric acid, 8¼ cts. per lb., potash, 4 1-10 cts. per lb., and nitrogen 16 cts. per lb.:

10 per cent phosphoric acid, at $8.25	$16.50
2½ per cent potash, at 4.1 cts	2.05
3½ per cent nitrogen, at 16 cts	11.20
	$29.75

This principle, using the rates prevailing for these elements of plant food for each year, will enable any one who can reckon to tell the value of the brand he is buying. If it is offered at $35 with the above composition, it is dear; it at $25 it is cheap. This is, of course, based on the honesty of the seller, or the care taken to verify the composition by the State chemist's analysis. The economic value of fertilizers is dependent upon local prices for crops and the farm upon which they are used. To make this clear I will state a few well-recognized truths in chemical farming.

Fourteen elementary materials enter into all crops, of which any one of ten of them not being in the soil will result in the total failure of the crop to grow. But of these ten needed materials all arable soils are held to have them all in abundance for crops save three. These three are nitrogen, phosphoric acid and potash, in their forms known to the fertilizer trade. But of these three materials only one on some farms, two on others, and all three on most farms are needed. A farm formerly under my charge needed potash only for good crops, another needed phosphoric acid mainly, but for large crops some potash, while this college farm seems to need them all for corn and only nitrogen for wheat. But again the demanded chemicals do not depend upon the farm wholly, but vary with the crop. Wheat and the grasses call for nitrogen. Clover, Beans, etc., call for potash, while Corn, Turnips, etc., ask for phosphoric acid in artificial supply.

The economic value of chemicals will then be measured much also by the intelligence with which we adjust the tertilizer brought to the soil and crop grown, as well as upon buying in cheapest form. These fundamental truths regarded, and places will be found in Missouri for chemicals; otherwise I believe that they had better not be touched yet.

A Plea for Small Fruits.

It is to me a most remarkable fact that more soil cultivators do not provide themselves with an abundance of luscious, health-giving small fruits. Trees of the Apple and Peach, and perhaps of the Pear and Cherry, are planted; but where there is one to do this, ninety will ignore Grapes, Strawberries or Raspberries. They feel that they cannot take time to devote to such small business as training Grapes or pinching back Raspberries. They do not really know how it ought to be done—and they will not learn.

Besides—and this is strong reason for neglect—it will require something of an outlay to procure the stock necessary for such a fruit garden as every farmer and tiller of the soil should have.

How extensive the small fruit plat should be will depend upon the size of the family. But it is safe to say that there are few farmers' families in the country that could not use in a year, by canning and other preserving processes, all the small fruits that could be raised on half an acre; and in many cases a whole acre would be none too much.

What will an acre of good ground, well stocked, yield? Not to go into an enumeration of the many varieties, we will suppose that an acre is properly planted in four plats, namely: To Grapes, to Strawberries, to Raspberries, and the fourth divided among Blackberries, Gooseberries and Currants. Whether the yield will be large or small depends upon the character and quality of the soil, and the management and skill of the owner. But under fair conditions an estimate may be made thus:

100 grapevines, in full bearing, will give 12 pounds each, or say 10	1000 lbs.
40 rods of Strawberries will easily produce one bushel to each square rod, often much more, but place it at	30 bush.
40 square rods of Raspberries should yield 20 bushels, say	15 "
As many rods in Blackberries, Gooseberries and Currants, say	15 "

Here we have not less than 70 bushels of small fruits, the most delicious, health giving food ever vouchsafed to man, if he but chooses to adopt the means to obtain it. No other acre on the farm, (no other five or ten acres) will approach it in real value. And the labor to obtain it is not difficult to apply.

If the 99 of every 100 farmers scattered all over this western land—I write from a western standpoint—could be induced to realize how much of good living they miss annually by neglecting the fruit garden what a blessing it would be. T. G.

Notes on Celery Culture at Kalamazoo.

J. R. VAN BOCHOVE, KALAMAZOO.

For early crop the seed was sown in March in the green house. A visit to different growers shows the plants to be in fine condition, with the prospects of a fine crop of early Celery, suitable to commence shipping some time in June. The amount will exceed last year's crop by quite a number of acres.

There is being more White Plume grown here this season than ever before, which shows that it is with us becoming a standard variety. The first sowing of Celery seed outside was made the second week in April. A great deal of Onion seed was sown at the same time. There are not as many Onions grown here as in former years, as the growers think there is more profit in Celery.

It is almost incredible to believe how much some of our Dutch growers realize from a small plot of muck ground. One grower here, from a plot 4 x 5 rods, taking in $80; and another, from a plot a little larger, $125. And many others do remarkably well. Now a-days nearly every industry is represented by some pool or combination, and Kalamazoo Celery is not an exception. A combination, known as The Kalamazoo Celery Growers' and Shippers' Association, has been formed for the purpose of helping prices and for the benefit of its members. Every shipper and nearly every grower here belong.

The growers will set out the early plants in May, and some venturesome growers as early as the middle of April. In my next I will tell how we blanch and market Celery during the summer months, free from rust.

Received at this Office.

CATALOGUES, ETC.—FIGURES INDICATE PAGES.

Kelsey Bros., Highlands, N. C., Trees and Ornamental Shrubs, 7.
Wilson, Wm. C., New York City, Greenhouse and Bedding Plants, 74.
Ellis Brothers, Keene, N. H., Roses, Geraniums, Carnations, and miscellaneous Plants, Flower Seeds, etc., 40.
Allyn Bros., Palmyra, N. Y., Small Fruits, 36.
Faxon, M. B., Boston, Mass., Seeds, 32.
Temple, F. L., Somerville, Mass., Ornamental Shrubs, Roses, etc., 126.
Hay, John S., Oneida, N. Y., Plants, Trees, Shrubs and Seeds, 30.
Kelsey, Fred W., New York City, Trees, Shrubs, etc., 18.
Jemison, W. C., Natick, Mass., Seeds, Plants, etc., 8.
Critchell & Co., Cincinnati, O., Plants, Seeds, Garden Requisites, 66.
Fitts, Joseph D., Providence, R. I., Small Fruit and Plants, 8.
Pomona Nurseries, Parry, N. J., Catalogue of Fruit and Ornamental Plants and Trees, 36.
Pierson, F. R., Tarrytown, N. Y., Seeds and Plants, 100.
DeCou, Samuel C., Moorestown, N. J., Small Fruits, 16.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. JUNE, 1888. No. 9.

June.

Oh, rare, sweet June! The sun ne'er looks so bright
As when he peers forth from thy azure sky!
Thy twinkling rills are crystals of pure light
To gem our way,—and as we wander by,
In dell and vale, we twine Field Roses white,
With Provence, Damask, Moss to give delight.
Oh, rarest month, departing all too soon!
Since Heaven we see not now, we think a boon
From thence was sent in thee, June, radiant June!
—*Sophie L. Schenck.*

ROSE HINT. A profuse bloomer must needs be a great feeder.

CLOSE PLANTING. One gain from close planting of Strawberries for matted rows is that by the greater compactness of plants they are better able to withstand severe winters.

LOOK OUT FOR THE SPROUTS. Rub all shoots and water sprouts from fruit trees before the wood hardens and see that all the sprouts about the bottom of any kind of trees are removed.

A GOOD RULE. Great is the future work in the garden that can be avoided if not a single weed is here allowed to ripen seed. With the exception of Chickweed and Purslane, this rule will not be very difficult to carry out.

TO ORIGINATORS OF NEW KINDS. Send any new fruits, flowers or vegetables which you may desire to have impartially tested in other sections to our ample experimental grounds. Address POPULAR GARDENING Experimental Grounds, La Salle, N. Y.

TYING UP EARLY CABBAGES. The tying up of the leaves of early Cabbages, says Gardening Illustrated, is much practiced by the London market-growers, and is to be commended. The operation is a simple one, just, in fact, similar to that adopted in the case of Cos Lettuces. The soft outer-leaves are folded carefully around the heart or center of the plant, and the whole is bound firmly with a withe or piece of bast. The center being protected from the weather, the Cabbages heart sooner by two or three weeks than they otherwise would do, and they are more easily handled in gathering and packing for market. Compact little Cabbages are always preferable to loose ones.

Failure of Russian Apples.

J. L. BUDD, IOWA AGRICULTURAL COLLEGE.

I have just read in the May number of POPULAR GARDENING the hasty statement of Mr. Dunlap under the above heading, which has gone the rounds of the Press. At another time the equally thoughtless paragraph goes the rounds that all of the Russian Apples mature in summer or autumn, and at best they are all thin, watery, and worthless in character.

The real truth is that Russia covers one-seventh of the earth's surface, and while the varieties grown in the Province of Kazan, Russia, may succeed perfectly in North Dakota and Manitoba, they would not be likely to do well at the home of Mr. Dunlap in Champaign Co., Ill. On the other hand the varieties of the Plains of North Silesia might do well at Champaign, yet they would surely fail in North Dakota. We are trying to find out by actual trial where they will prove most perfectly at home with us, and the recent trying summers and winters are favoring rapid advances in the good work.

Few Eastern fruit growers fully realize our need of hardier varieties than can be found in our old lists. Thirty years ago the lamented Dr. John A. Kermicott said at a horticultural meeting at Chicago: "Gentlemen, I have but one *blarney* Apple, and that is the Duchess of Oldenburg."

After all our ups and downs we can repeat the same remark to-day, with the exception that we have added a small summer Apple called Whitney's No. 20, and in parts of the West the Wealthy is hardy and productive. On the College Farm at Ames we grubbed up our orchard of over 1200 trees of 118 varieties, including everything supposed to be hardy—and only found sound trees of the Duchess, Whitney, and the Crabs.

Under these circumstances we are thankful that we have scores of varieties of the fruits of East Europe with as sound wood as the Duchess, and as free from blight and imperfection of foliage. If they do not give us a list for all seasons as perfect in quality of fruit as we could wish, we have in them the foundation for possible crosses, and we already have seedlings from this source that have much promise.

In estimating the quality of Russian fruits we must make a sharp distinction between their culinary and dessert varieties. As instances, such varieties as the Silken Leaf and Hibernal Apples and the Gakoosky Pear are classed in the culinary list. For this use they are not often excelled, but for dessert they would rank very low. On the other hand the sorts listed for dessert use by Shroeder, Fisher, and Regel, compare favorably with such varieties as Early Harvest, Famense, and Baldwin.

Where such varieties as the Early Joe, Dyer, Porter, Jonathan, and Grimes' Golden, can be grown safely and profitably, it may not be advisable to plant any East Europe fruit, but the favored residents of such localities should avoid throwing cold water on the efforts of those who are trying to perfect a fruit list for more trying sections of our great country.

Nature's blessings are perhaps wisely distributed. If strong Massachusetts can at present do best in the way of growing the finest orchard fruits, our rich, easily worked soil will develop and perfect under our glorious summer sun such Corn, Melons, and Tomatoes as they never see, and in the near future we hope to equal them in growing the orchard fruits and to excel them in perfection and flavor of our small fruits.

How we Blanch Celery at Kalamazoo.

JNO. B. VAN BOCHOVE, KALAMAZOO, MICH.

The operation of blanching is one of the principal parts of growing good Celery. Even large, well grown Celery, if it be not well blanched looks very interior, and if it sells at all, it is usually at a very low price.

In no other part of this country, except in the far South, is Celery grown as early and of such good quality, (being as good usually as the late crops), as in Kalamazoo. We think, however, that it is useless for any person to try and grow early market Celery unless they have the right kind of soil. If grown on high ground the early crop will nearly all run to seed.

Some gardeners commence hilling Celery nearly as soon as it commences to grow, while here we wait until the plant has attained nearly its full growth. We look more to the thickness of the Celery than the length which later develops as soon as hilled, but increases in thickness very little.

We have two methods of blanching Celery. One being by ground and the other with boards. We prefer at all times to hill with ground when the weather will permit, but when it is too hot we use boards.

GROUND BLANCHING. When two crops are raised nearly all the work of hilling has to be done by hand. If one crop is grown the soil can be thrown toward the rows with the plow, thus greatly reducing the labor. A large hoe is used, about twelve inches in length. With this the soil is drawn lightly against the Celery. No dirt is allowed to fall in the heart of the plant.

About five days after, and after it begins to blanch a little, the muck should further be put up against the Celery with a hoe. If it cannot be done with a hoe, a spade or shovel must be used. This second hilling should be about six inches higher, or almost to the leaves of the Celery. The bank at the bottom should be broad, so that when the soil is drawn up it will not easily roll or wash down. After three days loose ground should be taken from the sides of the rows and gently pressed against the Celery to the height of two inches. In doing this great care should be taken, if the weather is warm not to get it too tight or it will rust. This finishes the process of banking with ground. It will blanch in from ten to fifteen days from the first hilling for the good Golden Dwarf variety, but others take longer.

BOARD BLANCHING. This method, it is claimed, originated in Kalamazoo a number of years ago, and has been in use continuously since. It requires two men to blanch with boards. The boards should be from ten to twelve inches wide, according to the height of the Celery, one inch thick, 12 to 16 feet long, and free from knot-holes, which would admit the air. On the ends of the rows the space between the boards should be filled out with grass or soil, otherwise the first few stalks would not be blanched.

The boards are first distributed along the row and laid flat on the ground, on both sides, the edges against the bottom of the plants. The men straddle a row at each end of a board. The boards are raised by the outer edges and both feet planted against them; the leaves are straightened up, without breaking, and the boards pressed against them. They are then fastened at the top with a small piece of wood, which is eight inches long and two wide. In this two notches are sawed to the depth of $1\frac{1}{4}$ inches and $2\frac{1}{2}$ inches apart, which will leave the boards $2\frac{1}{2}$ inches apart, which is the right distance on fair sized Celery. About four of these pieces should be used on a 16-foot board. If the Celery is small, the boards should be somewhat closer. Heavy pieces of wire may be used instead of wooden pieces. When the row is completed, the earth should be drawn against the bottom of the boards, to keep them firm against the Celery. This completes the work, and the crop will now take 10 to 15 days in blanching.

The growers here do not keep any Celery after the 1st of January, as the demand is

so great that it is all disposed off by that time. We had some snow here on May 13 and 14, and also frost, which is not very encouraging for our early Celery planted out. Seed in the seed beds has lain in the ground for five weeks; this taking so long on account of the cold backward weather.

"WOODBANKS."

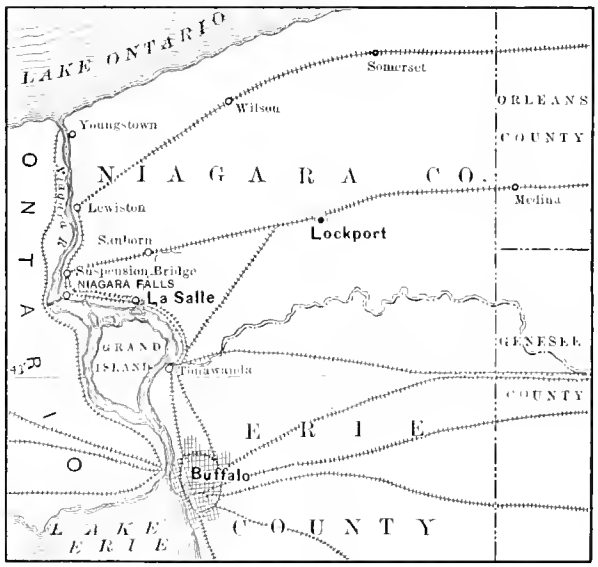
Popular Gardening and Fruit Growing's New Experimental Grounds.

As boy and man the conductor of this journal had previous to three years ago always been engaged in fruit growing and gardening in one or more branches. For many years it was as active manager, in part, of one of the largest fruit and market gardens near Buffalo. About five years ago, however, the march of the city's improvements had so crowded on its outskirts as to render the sale of his grounds desirable, and this took place. It was following on this event that he turned his attention to popular horticultural journalism, and shortly afterwards, as controlling partner, to publishing the present successful journal. At the same time he temporarily took up his residence in Buffalo, first to be at the very helm of affairs in the publication office during the critical period of founding the journal; second, to for a spell mingle somewhat freely among retail consumers instead of as always before among producers of horticultural products, and lastly he desired time in which to select a new fruit farm and garden, properly located, and which might be conducted in the interests of American horticulture in general, and of the readers of this journal in particular. The time for making a change from the basis referred to has now arrived and the conductor takes pleasure in stating that a new and most desirable farm has recently been chosen and negotiated for by him, and at this writing the transfer is in progress. This farm, which shall probably be known as the Niagara Experimental Grounds, is located in that most famous fruit section, Niagara Co., N. Y., La Salle post office, and in the very midst of numerous fruit farms, market gardens, evaporating establishments, etc. Its site is one-half mile from Niagara River on the banks of an arm of said river, hence the name "Woodbanks," and five miles above the great cataract. At this late hour, before the May issue is printed, we have neither space nor time to go into particulars concerning the place and its future; this information will keep until next month. Sufficient to say that here the editor will live and here—being but 35 minutes ride from the Buffalo office—he will jointly conduct the journal and manage the farm in the interest, and as he believes, to the great profit of all readers.

The above announcement appeared in only a portion of our May issue, hence is here repeated. To the above may be added the fact that on May 1st the conductor of this journal acquired a clear and satisfactory title to "Woodbanks," and within a week later he had moved his home and editorial office to the new place.

THE FARM AND ITS FAMOUS LOCALITY. "Woodbanks," the place to be widely known hereafter as the Niagara or POPULAR GARDENING Experimental Grounds, is a tract of 13 acres lying less than one-half a mile from La Salle Station, Niagara Co., N. Y. Lands adjoining it on one side could easily be included in the place if at any time an enlargement was thought desirable. The largest boundary of the grounds is the Cayuga Creek, a stream, which at this point is virtually an arm of the Niagara river, the waters of the two being on the same level. On the grounds are growing some 200 young bearing fruit trees, numerous ornamental trees and shrubs, besides a fringe of second-growth native trees, shrubs and plants along the creek banks.

But while the grounds are of the size stated, in point of fact the real field of experiment and observation here is immeasurably larger, for this farm is but one of many fruit farms and gardens in the near vicinity and over Niagara County, which county, is no doubt more thickly planted with fruit trees than any other spot of equal extent in America, if not in the world, while adjoining counties are hardly less thickly set to fruit. For a close occupancy of land, however, with Apple, Pear and Peach orchards, small fruit plantations and market crops the region immediately about La Salle must take the palm. The railroads in both directions pass through miles of almost unbroken orchards and fruit lands, it being estimated that of the three square miles of land lying nearest to the village, more than one-half of the area is devoted to horticultural crops. In vegetables the locality is famous for its Tomatoes, Cabbage, Cucumbers and Celery, all of which are grown extensively and shipped to considerable distances.



MAP OF NIAGARA CO., N. Y. SHOWING LOCATION OF LA SALLE AND OTHER POINTS.

Favorable as is this locality for making observations on fruit and vegetable culture, however, the unequaled opportunity to study advanced ornamental horticulture hereabouts must also be noted. Five miles away at Niagara Falls is the extensive New York State Park Reservation, comprising 107 acres, while directly across the river is the similar park reserve of the Canadian Government, both of which parks are now rapidly being improved. Less than 22 miles up the Niagara river from the Niagara Falls Park, and soon to be connected with the latter by a magnificient, 200-feet wide, tree-planted Boulevard on the river banks (and passing through La Salle), lies the extensive 1100 acre Park and Cemetery improvements of the City of Buffalo, and which now are in a beautifully developed state. In these latter grounds alone, there are nearly 50,000 ornamental trees and shrubs which have been established for upwards of ten years, and which together afford a chance perhaps second to no other in the country for studying the kinds and uses of growths in this line suited to our latitude.

The accompanying map will make clear the exact location of La Salle and its convenient proximity both to Buffalo, where this journal will continue to be published, and to the greatest of natural wonders, Niagara Falls. Upwards of twenty passenger trains between Buffalo and Niagara Falls stop at La Salle daily.

THE OBJECT OF THE WORK. The need of an Experimental Garden managed in the direct interests of the readers of this journal has from the time it was founded been realized. Every season brings forth its tide of novelties in fruits, flowers, vegetables, etc., which require to be carefully tested and compared with the standard and other sorts of the day, and relative to which impartial information is in wide demand. The same is true of new implements and appliances of horticulture, of fertilizers for the soil, remedies for plant diseases and for insects which infest plant and tree life. In addition to this there is always open a broad field for special experiments concerning the best methods and the best times for performing an endless number of operations connected with the most successful horticulture.

It cannot, it is true, be said that there is a dearth of information concerning these subjects now, for the rural press abounds in such matter. But this information in the nature of things is often, to some degree at least, damaged by admixture with the facts of personal interests, opinions, and prejudices, or sometimes by the incompetency of witnesses to judge. Now what it is here proposed to do is not to supplant this kind of information from a wide field, and which in its way is valuable, but to *supplement* it by additional careful and strictly impartial tests and comparisons on a more extensive and accurate scale than can well be carried out by individual enterprise. To such a special end, and in connection with this journal, the present Experimental grounds have been established, and in the work of which the hearty co-operation of all our readers and of the public generally is sought.

AS TO THE CHARACTER OF THE WORK. Operations here will be conducted on the plane of ordinary horticultural practice, employing the means usually at the command of cultivators. Those who visit the grounds, therefore, with the idea of meeting any extreme system of culture impracticable to ordinary growers will be disappointed, and while the value of scientific tests and investigations in the labratory as applied to horticultural subjects is by no means to be ignored, yet in the main such will be left to others.

One thing which it will here be the aim to emphasize, is the advantages of the best methods of tillage and management as compared with those of inferiority. This will be done by employing a simple system of soil preparation and after-treatment in the way of strips of land differing in richness, kinds of manure used and thoroughness of culture, and across which row of all the varieties under cultivation will extend.

The advantages of this plan will extend far beyond a mere object lesson in different kinds of culture; it will show which kind of treatment any given variety will best bear, or can with the greatest impunity tolerate. All tests and comparisons will thus be on a uniform basis for all varieties, and hence, must prove to be far more trustworthy than when, for instance, Mr. A in one section may grow a certain variety under one state of things and be enabled to report on it favorably, and Mr. B, under quite different circumstances of culture for the same variety, is forced to report against it.

An outline, somewhat crude, of the direction in which further light upon practical horticultural matters is felt to be desirable, and will here be aimed for, might be set forth as follows:

TRIALS OF OLD AND NEW VARIETIES of Standard and Dwarf fruit trees, Small fruits, Grapes, Vegetables, Ornamental trees, Nut trees, Flowers, Lawn Grasses, Hedge plants, Climbers, etc.

EXPERIMENTS IN CULTURE. Having in view soil preparation and tillage, Root treatment, Pruning by various methods and at different seasons, Mulching, Protection, Distances to plant,

Hill as against drill cultivation, special methods in all departments.

MANURES. The closest possible attention to saving and utilizing all home products. Special home-made fertilizers. Experiments with Mineral, Vegetable and Animal manures. Green Manuring, also Irrigation.

APPLIANCES. Trial of Tools and Implements. Experiments in constructing Greenhouses and Graperies in cheap popular styles, Unheated Greenhouses, Fruit, Vegetable and Flower Forcing Pits, Cold Pits, Cellar Pits, Frames, Hot-beds, Hand-glasses, Various methods of artificial heating. Experiments in Preparing, Preserving, Marketing and keeping Fruits, Vegetables, Flowers, etc.

EXPERIMENTS IN PROPAGATION by Seeds, Cuttings, Layers, Grafting, Budding, Division, etc., with a view to the best methods and seasons for different processes.

IMPROVEMENT OF HORTICULTURAL PRODUCTS by Selection, Crossing, Hybridizing.

FORESTRY. The providing of Timber Screens and Plats, Windbreaks, Highway planting, etc., as applicable to farms and small places.

Finally, let it be specially impressed, that these grounds, like the journal with which they are to be jointly managed, shall be devoted solely and impartially to the cause of an improved American horticulture. In general the constant object shall be to promote the culture of fruits, vegetables and flowers in ways that shall lead to more remunerative results when engaged in as a business, and more gratifying and successful ends when pleasure, recreation, or the good of the family is the object. Every reader of this journal is therefore most cordially urged to take a special interest in the work and to feel that he is to be a sharer in the outcome, while we can assure them that the suggestions of all for increasing the usefulness of the work are earnestly invited and will be most carefully considered.

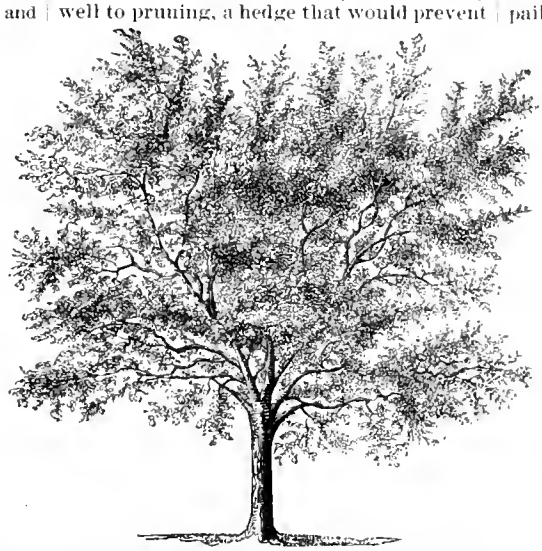
Moreover, the gates of the place shall always be open to their visits, and all are invited to come and see and study as they have opportunity. A consideration in deciding on the present location was its superior accessibility to the traveling public, and with being located midway between Buffalo, one of the great railroad centers of America, and of Niagara Falls, that Mecca of travelers from the world over, we hope, as our work gets fairly under way, to have the pleasure of greeting multitudes of our readers annually on these grounds. With this introduction to the POPULAR GARDENING Experimental Grounds we close, but simply adding that hereafter references to this new branch of our journal's enterprise shall be a common feature in the journal's columns.

The Myrobalan, or Cherry Plum. Its Use for Hedges.

Reference has several times of late been made in these columns to the Myrobalan Plum as a stock for the edible sorts of Plums. We are not aware that this species has been put to other uses than that of a stock for Plums in this country. In England, however, it has come into use as a hedge plant, and also for ornamental planting somewhat, according to the Garden, from which journal we quote the following interesting remarks concerning the species:

Of late years the Cherry Plum has become well known among planters, not so much as an ornamental tree as for its use as a hedge plant and for covert planting. A few years ago it was a good deal written about. Some even said it made the finest of all hedges, the result being that some nurserymen began to grow it on a large scale for hedges and coverts.

Though it will perhaps never surpass the Hawthorn or Quick as a hedge plant, it is unquestionably well adapted for this purpose, and if planted properly and the soil suits it, a dense impenetrable growth results in a few seasons. It grows freely in the poorest of soils, which is a great recommendation to it, and if the young plants are managed properly by cutting them hard in when first planted and subsequently looking well to pruning, a hedge that would prevent



Tree of The Myrobalan Plum (Prunus Myrobalana.)

a hare or rabbit from going through it will be formed in about three years.

It must be planted in a double row, with the plants about a foot apart and alternating in the rows. In hungry soils some good rotten manure should be dug in deeply. It is a good plan to cut the plants down almost to the ground after having been placed in position, and if well rooted they will the first year send up strong shoots, which if pruned back the following winter will, during the second season, make bushy specimens.

One of the best Cherry Plum hedges the writer has seen was planted about eight years ago. It is now as tall as a man, and nobody would attempt to break through it. This hedge is highly ornamental, inasmuch as the owner has at intervals of about 10 feet or 12 feet allowed strong single stems to rise above the hedge and upon these he has grafted various sorts of Plums, and these spreading standards rising out of the hedge have a fine effect, and are moreover useful.

The Cherry Plum is seldom planted for ornament, though it possesses considerable merit on account of its being one of the earliest of all trees to flower in spring. It bears a profusfon of small white flowers, which are remarkably beautiful if they escape the late frosts. It is but a medium-sized tree even under the most favorable conditions of growth, and, like the common Plum, makes a compact spreading head. It does not fruit freely in this country, though in some seasons, when its blossoms have escaped the frosts, one may see an old tree with a scanty crop of its Cherry-like fruits of the size shown in the illustration. They are of a dull, reddish color and astringent.

The new Prunus Pissardi, now becoming so popular in gardens both large and small, is nothing more than a purple-leaved variety of the Cherry Plum; but as it is so distinct that no one would mistake the one for the other, it is convenient to keep to the name Prunus Pissardi, or Purple-leaved Cherry Plum. We look upon this as the most valuable acquisition of years to our list of blood-leaved shrubs. As this is a beautiful shrub when forced into bloom early there is no reason why the Cherry Plum itself should not be employed for a similar purpose.

Watering Fruit and Other Trees, Etc.

W. W. FARNSWORTH, LUCAS CO., OHIO.

My plan of watering trees, which has always given excellent results, is as follows: I dig away the earth from about the stem of the tree down nearly to the roots, and into this basin pour an ordinary wooden pailful of water. After this has been absorbed I apply another pailful, and when it has disappeared replace the earth, packing it firmly, and draw a few inches of dust over the surface for a mulch.

A tile in a perpendicular position in the ground near the tree, with its mouth about even with the surface of the ground, and into which water could be poured, has been recently advised. The suggestion has some good points, but I think a cheap wooden tube, three or four inches square, with perforated sides would be better, as it would allow the water to escape into the soil all the way down instead of merely at the bottom of the tile.

We watered a block of Currant cuttings last year with very satisfactory results, by drawing a slight furrow on each side of the row (triple rows) and pouring the water onto the cuttings, the furrows at the side serving the double purpose of retaining the water, which might otherwise have escaped, and also of aiding the water in reaching the roots. A sufficient quantity was applied to saturate the earth down to and about the roots, with very marked benefit. We prefer hard water from the canal half a mile distant rather than use the colder water in our wells, of which we have an abundance.

A newly set orchard of two hundred and eighty Pear trees started to grow finely, but in a few weeks began to show the effects of the drought very plainly, when one thorough watering so far restored it that I lost less than five per cent of the trees; whereas I believe I should have lost at least thirty or forty per cent without watering.

On similar soil to my own a neighbor planted two hundred fine Arbor Vitæs about his lawn in well prepared sandy loam. The trees were dug and planted on the same day, a damp and cloudy day. They were carefully planted by one of my most successful planters, and the ground around them immediately mulched.

These trees all grew nicely for some time but finally began to look thirsty, and my neighbor resolved to water them. Being more of a stockman than horticulturist, he

Branch, Fruit and Flowers of the Myrobalan Plum.

watered them on the principle so well suited to horses, viz.: "a little and often," but failed in one important particular, in that he did not get the water as near the "mouth" of the tree as he would to that of his horse.

He drew a barrel of cold well water daily and applied it to them all around, giving about enough to each to lay the dust nicely. In so doing he expended during the season much more labor than would have been necessary to have given them two or three

thorough soakings, such as would have saved his trees, whereas he lost a large share of them.

Another plan which applies equally well in either a wet or dry season is to plant trees, shrubs, vines, etc., early, whereby they may become established and start to grow before severe hot weather.

I believe it would also be beneficial to sprinkle or spray the leaves and branches of the trees, as well as to water the roots, although I have never practiced it.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

Annuals. Nip off all annuals at tip now, if you want them to grow stocky and flower profusely.

Whitewash bodies with lime whitewash, putting a spoonful of carbolic acid in a pail of whitewash.

Pruning Peach Trees. Cut back one-third to one-half of last year's growth on Peach trees, and you will get finer fruit and as much of it in bulk.

Worms. Don't forget to syringe the Currant and Gooseberry bushes with white powdered hellebore dissolved in water—say a spoonful to a pail of water, to keep off or destroy the worms.

Loose Bark. F. N. lost a number of Cherry trees by the bark becoming loose from the ground up for about a foot and a half. "Frozen to death is our verdict. It is hard to save such trees, and the only chance is to plaster on the bodies fresh cow dung mixed with clay mud and bind leather around this, and leave for one season.

To Extend the Crop. Picking off the first blossoms would make no perceptible difference, only if soil is poor the last berries would be more fully developed, and finer fruit, but if land is strong there is nothing gained. The best way to have late fruit is to mulch the surface heavily with new mown grass, or short hay or straw, or even old spent tan bark or rotted sawdust with some salt mixed through, it will be found good.

Transplanting Old Plants. Strong Strawberry plants, set a year ago, and bearing a few berries this season, are not as good as this year's new plants. Plants that yield fruit are exhausted, and require some time after fruiting season to make new roots. However, if in setting them one cuts off all of the old leaves close to crown, and wets the roots thoroughly when transplanted, they will make good plants for fruiting next year.

Seedling Strawberries. It does *not pay* only for those who have plenty of spare time and who are willing to get one fair to good sort out of a hundred seedlings, or perhaps one extra sort out of 6,000 to 10,0000 seedlings. They do not reproduce the same once in a thousand times. But where one desires to do so let them take ripe Strawberries, mash them on thick paper and dry in a shady place, and sow in light, loamy soil under glass and keep surface moist.

Bedding Pansies. Those who have seen Pansies massed, have no idea of their great beauty. They are thorough we weather plants, i. e., they are not destroyed by wind or rain, as most bedding plants are; and not only that, but they are so easily grown. We planted last season about 7,000 different violas. One border, about 400 yards long, and 24 feet wide, planted with Pansies and Geraniums, and having a single row of pyramidal shaped Zonale Geraniums in pots, at intervals of ten feet, was the admiration of every one who saw it.

Raspberries Running Out. People talk about black Raspberries running out and deteriorating. So they will if not properly cared for, but just try giving the hills a good lot of compost every year in the fall or early in the spring so as to give the new canes a luxuriant growth, and you will find a plantation will last years. We have an old plantation of Greggs heavily manured for two years past and it was better last year than the year before and will be better this year than last. And, too, we hear the theory (especially from those who happen to have only young plantations) that such only are fit to take plants from for setting. Nonsense! We don't care how old a plant is. If it has been well manured and growing luxuriantly, the tips from these are as good as from one year old plants.

Irrigation. We hear much said and see much written about watering trees and plants, that is doing more harm than good. A small quantity of water sprinkled over the ground around the plants in hot, dry weather, is of no use, and, in fact, a detriment and damage, for the reason that it leaves a hard, dry crust around the plants; Don't do it unless your ground or plants are *well* mulched—then "baking" or "crusting" is preventee. In sections where a constant supply of water can be run over the ground through channels, as is done in many sections in the Territories and Pacific States, good is done even if not mulched. Remember, if *well* mulched, a little water does great good, but if not mulched positive harm unless earth is drawn away, and after water is ponred on, the earth pushed back.

CROWDING LAND.

Yes, land may be crowded if it is fed in proportion and the right care is given.

We are often asked "can I plant Raspberries or Blackberries and Strawberries on the same ground?" As a rule we have not advised it, but necessity will set us to thinking and by practicing the same bring about practical results. We are setting a large number of Black Raspberries this spring, and being short of land for Strawberries we propose to experiment as follows: Our Raspberries are set 3 to $3\frac{1}{2}$ feet apart in the rows and rows $6\frac{1}{2}$ to 7 feet apart. Half way between we propose to set a row of Strawberries. The growth the Raspberries make this year bear but a small crop next year and the bushes are but small, while the Strawberries yield a full crop. Many advocate getting but one crop of Strawberries and then ploughing under. To this class this plan will work well, as Strawberries being half way between the Raspberries can be easily turned under as quick as through bearing, just as Raspberries begin to ripen.

However, if both Strawberries and Raspberries are well manured the first can stand two years by not allowing rows to mat out too wide, and thus get two full crops of Strawberries, the last crop coming the same season as the first full crop of Raspberries, and by ploughing under as soon as last picking is made they are out of the way of the Raspberries. Of course, in growing this way, one should not depend on layering the Raspberry tips, but keep them well and timely cut back while growing, so as to make the canes three or four feet high and stocky and stout. Tips may be grown from the plants the first year by layering close in the Raspberry rows, and also the second year by layering the same way; but we would advise layering but the first year, unless the Strawberries are allowed to yield but one crop and then if ploughed under of course tips can be grown.

The safest and best way to grow Black Raspberries and Blackberries for fruit is to plant thick and cut back thoroughly, making a perfect hedge of canes that are strong and stocky. Of course, in growing two crops together as described above compost or manure must be used freely, also mulch.

COMPOSTING HEN MANURE.

H. L. E., of Massachusetts, wants advice as to the best method of composting hen manure for general use in garden and field and estimates on the quantity safe per hill.

Plaster and lime are the best substances for composting hen manure, since the litter contains such an excess of ammonia that it is liable to poison the plant somewhat, or cause too rank a growth of stalk. The lime is of no value in eliminating and holding the superabundance of ammonia, and its relation to the phosphates is similar. The lime also rots the manure quickly, rendering it usable by plants. The hen manure is excessively rich and needs a dilutant. One part of the manure to eight or ten parts of plaster is a good proportion for the mixture, although this may be varied to adapt it better for different soils and different crops. For a very limy soil use less lime in the compost, and for a clay soil as much as ten parts of plaster to one of manure. This preparation had better be applied wet or allowed to rot a week before using. It is preferable to place it not in contact with the seeds but beneath them, where their roots will find it, and after the plants are up if they seem weak and sickly it may be applied to the surface of the ground above the hill. The quantity used should vary according to the needs of each particular kind of soil or crop, but generally a large handful of this mixture may be used in each hill.

With this as a general rule you can ascertain how much land your stock of manure will supply, and you see it will depend on the number of hills per acre, which differ for each of the different crops you mention.

SMALL FRUITS ON POOR SOIL.

S. R. J. has a very poor piece of sandy soil, hardly strong enough to grow enough white beans to pay for expenses of cultivation. He wants to know if he can use it for any kinds of small fruits, and if so, what?

Many soils may be considered poor that have had a shallow cultivation for years and years—or even quite a deep cultivation—and yet underlying all are elements that roots of certain plants, like the Grape, seek after.

We remember digging a well at the West, in "burr oak soil" that had been run from 25 to 30 years. The corn growing on said land was hardly worth cutting. On the bank of earth thrown out from digging the well some Corn and other seed was planted, and finer Corn and plants were never seen than that grown on this earth from a depth of twelve to fifteen feet. And, too, fruit will many times grow luxuriantly if well cultivated, on many soils that have seemed to "run out."

We should have no hesitation in planting on your soil Grapes, Raspberries and Blackberries, and even Strawberries. Good, deep plowing and thorough cultivation afterwards, with your compost scattered around the plants, will give you finer fruits than you have any idea. In fact, as fine Blackberries and Grapes as we have ever grown, was on soil that had been "run" thirty years, and would hardly sprout white Beans. In obtaining said crops, however, we plied the hoe, and cultivated faithfully.

Producing Seedling Strawberries.

J. H. HAYNES, DELPHI, IND.

The origination of new varieties of fruit is becoming so common that the question is pertinent whether the increase in merit is equal to the increase in varieties. Many new kinds are thrown on the market each year only to drop into oblivion after one or two seasons. Accidental seedlings are seldom found with merits sufficient to warrant their dissemination, and only by careful efforts of intelligent workers can we hope to better the kinds now in use.

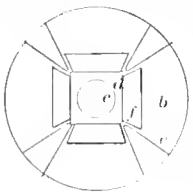
In our own efforts in this line we have aimed to map out our expectations before seeing our productions, and pretty generally we have been successful in this. It is only by securing the best varieties for parentage and by careful crossing that we can hope to succeed. From the product in new seedlings we save only such plants as prove superior to the parents. Superior not alone in plant but in quality, size and beauty of fruit, and ability to resist drought and moisture.

We grow under glass almost exclusively such berries as we use for seedlings. So far success has crowned our efforts in the production of several very choice seedlings.

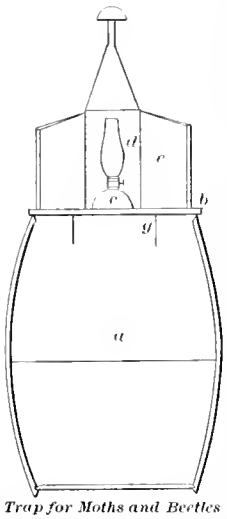
We are also experimenting with a batch of French seedlings in the hopes of getting something worthy.

Trap for the White Grub Beetle, etc

A number of our night-flying beetles and moths may be trapped by the home-made device here figured. Among these are the May Beetle the perfect insect of the dreaded White Grub, which is such a serious foe to the Strawberry grower, the Cutworm Moth and the Army-worm Moth.



The construction of this trap is so simple that anyone, with a little help from a tinsmith, can make one. In the two figures given, the letters of both refer to the same parts of the device as seen from a different point of view. *a* is a common barrel that will hold water in its lower third. It should be filled with water to this extent, and if a very little kerosene is poured on the surface the destruction of the entrapped insects will be more rapid; *b* is the barrel cover, made of inch board, and which serves as the lantern base; *c* is the lamp, a common kerosene one; *d*, glass sides of the lantern, said lantern being square and constructed on the plan of the old-fashioned slide lantern. Any tinsmith can make it; *e*, reflectors, consisting merely of four pieces of bright tin, bent to a V shape, with the point of the bend brought to the corner of the lantern; *f*, openings in cover *b*, through which the insects fall into the barrel after striking the glass *d*; *g*, tin guard nailed against outer edge of opening *f*.



Trap for Moths and Beetles.

The Moths named fly from May until August of each year. By close attention to keeping the trap in order and removing the collected insects daily, a decided decrease in the kinds named can be effected.

A Home-made Weeding Rake.

BY GEO. TOLLARD, HILLSDALE CO., MICH.

For cleaning up all small garden crops, the flower beds, etc., I have for several years used the handy little device of my own make, of which I send the enclosed rough sketch. It hardly needs to be described beyond saying that the head and handle is of White Oak, and the teeth were forged by a blacksmith. They were inserted by first boring a hole through the head with a gimlet and then driving them in. With a file the points are easily kept sharp. The first rake of the kind I made had twelve-penny nails filed to a point for teeth, and it did good service.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

IMPROVING THE SCHOOLS. I think that before Mr. Garfield tries reforming school teachers and the instruction imparted to them (page 139), he should educate the people to the point of paying teachers better wages. The very low prices that prevail force the best teachers into other occupations, where ability and conscientious work are fairly paid. This is why young girls are so often teachers, and is in part responsible for the "the short time that our country teachers remain in one field of labor." Offer better compensation and better teachers will be got; the instruction will be so much better than the instruction now given that it will be cheaper, though it costs more per month; and the serious obstacle in the way of making our school house grounds things of beauty and means of education will be removed.

ON SETTING TREES. Mr. Fairbanks (page 143) makes a good point, but unfortunately what he says is very apt to miss just the one that needs it. The matter may be reversed. Thus, I heard a neighbor say the other day that he considered it worth at least twenty cents to plant an orchard tree, and he wanted the tree to be worth at least what it cost to put it in the ground; hence he did not buy inferior Apple trees offered at *five cents* each. If planters put in the trees properly, they would demand better trees and of course would pay better prices for them. This would be to the benefit of responsible nursery men. I think that for another reason nurserymen should urge buyers to plant properly and when possible give an illustration of the work; for when the tree does not grow the nurseryman gets the blame, though the fault was in the planting.

ASHES AND FRUIT TREES. This reminds me. Some years ago I gave my experience with wood ashes in fruit growing, and among other things narrated how I once put a pailful of ashes in the hole, it being nearly full of water, and planted the trees on the ashes. The tree has made a very vigorous growth– the thing I didn't expect it to do–and I did expect my statement to be criticised. It was—by the editor of a local paper for one. He said my story was an exaggeration on the face of it, for if I put in so much ashes I would have to put the tree on top of the ground! It did not occur to him that a hole for a fruit tree could be made larger than the crown of a derby hat.

BENEFITS OF BAGGING GRAPES. To Mr. Crissey's advice to bag your Grapes if you want to save them from the English sparrow, I would add to do so if you want to better their quality, particularly the flavor of some varieties. The Concord is yet the Grape of the people, yet its quality is not the best. But bagging makes a decided improvement. If you would know just how great this improvement is, bag part only of the bunches on a vine. Then you may eat the bagged an unbagged Grapes at the same time.

WHITE GRAPES IN MARKET. Apropos the Pocklington, a St. Louis commission house states that among the New York and Ohio Grapes received last season were some of the Niagara and Pocklington. "The bunches were large and compact—berries as large as the Concord—good flavor and shippers, and altogether highly attractive in appearance. They sold readily at ten and twelve cents per pound, when the market was crowded with Grapes." These shipments must have arrived not far from August 15 (the period of lowest quotations, I believe), when the quotations were: Hartford, 2 cts.; Ives, 3 cts.; Concord, 3 to 5 cents.; Delaware, 10 to 12 cts.; Martha, 5 to 6 cents.; Goethe, 6 to 8 cts.; Elvira, 7 to 9 cts.

RUSSIAN APPLES. Mr. Tuttle denies that he was correctly reported in the quotation on page 145. He says that while he admits that a few of the one hundred Russians he has fruited do blight —some of them badly, none worse than the old Russian Apple, Alexander. The past season was one of the worst for blight he has ever seen even the Duchess blighted; yet a large proportion of his Russian orchard showed no blight, and most of what did showed very little. His Russians showed less blight than his American varieties. His Russians were not nearly so badly winter killed as his Duchess orchard. Also a large proportion of the new Russians are early and abundant bearers, many of them better than the Duchess as annual bearers. A number of them have borne heavy crops six years in succession.

WOODPECKERS AND FRUIT. I can't agree with Mr. Deming, of Kansas (page 150), if he refers to the red-headed woodpecker. This bird is the worst thief I know of. He gorges himself with my best Cherries, thus disposing of a surprising number; and then, out of "pure cussedness," pecks off nice bunches and drops them on the ground. He feasts on Grapes and pecks the Apples. I would rather get rid of borers by other agencies than by his bill. I think *noble* is misapplied to this bird; and while I am very slow to kill any bird, remembering "The Birds of Killingsworth," I would not be at all sorry if a blizzard caught the woodpecker. *U. Y. L., Adams Co., Ill.*

DOUBLE PETUNIAS. Mr. Goodell should have seen my bed of Double Petunias grown from seed last season. Several plants measured four feet in diameter each. They were started in a hotbed of course, and transplanted into the border the last of May, much later than usual, on account of the drought. The soil was composed of a large proportion of chip manure, enriched with barn-yard fertilizers, I never had such success before. There were hundreds of flowers at a time all through the latter part of the season.

The same soil does not grow Tea roses satisfactorily with me. *Mrs. T. H. Lovejoy, Mitchell Co., Iowa.*

BEN DAVIS APPLE. A Michigan man on page 166, speaks of the variable quality of the Ben Davis apple. At the last meeting of the Missouri State Horticultural Society it was stated that the quality of this fruit is better the farther south it is grown. Secretary Goodman said that some specimens he carried to Michigan were pronounced by fruit growers there much superior to those grown in that state. The season of 1887 was hot and dry with us here in Missouri and most varieties of Apples other than the Ben Davis made a total or a partial failure. It had a fair crop; and those grown on thrifty trees well cared for were of unusually good quality. Persons who in former years would scarcely eat the Ben Davis at all admitted that it was very good the past winter. What it gained in quality it lost in keeping, and we were without Apples about a month sooner than usual. The Arkansas Ben Davis is said to be even better than that of Missouri. Good, bad or indifferent as it may be as to quality, with us it is by all odds the most profitable variety, grown in this state. Even those people who think it unfit to eat will not pay enough more for Apples of finer quality to make their culture profitable in comparison with the much abused Ben Davis.

SPRAYING TREES WITH POISON. The first week in May I got a spraying pump and gave my apple trees a dose of poison. In accordance with a recommendation given at the Missouri State Horticultural Society last winter, I used the common white arsenic dissolved in water which held in solution an equal weight of caustic potash. At first I used one pound of arsenic and one pound of potash to two hundred gallons of water; but when I looked up my notes made at the meeting I found that one pound of arsenic was said to be sufficient for four hundred gallons of water.

A week has passed, and I find that the foliage of those trees on which I used double strength solution is considerably burnt. Some of the fruit seems injured, perhaps killed. It is too soon to say how great the injury will prove to be. The trees I sprayed after weakening the solution to one-half its former strength show no injury to the leaves or fruit.

The arsenic cost me twenty five cents per pound at the local drug store. They had neither Paris Green nor London purple. If the white Arsenic is efficient it certainly has the merit of cheapness, about three cents per barrel of fifty gallons of water, even when twenty five cents per pound is paid, which is more than double

Home-made Weeding Rake.

what it should cost if bought in quantities of several pounds at one time. If any of your readers have used the white Arsenic successfully for the Codling Moth I would like to have their experience. – *R. E. Bailey, Callaway Co., Mo.*

MAD. SOLLEROI GERANIUM. I agree with Elder's wife in thinking Mad. Solleroi the best silver-edged Geranium, but to be seen at its best it should be bedded out during the summer, carefully lifted before danger of frost. It can also be wintered in the cellar, and the tiniest cuttings are sure to root. *Mrs. E. L. P. Linsville, Pa.*

PEAR BLIGHT. Referring to the article in the May issue, I would say that some half a dozen years ago thirty of my Pear trees (dwarfs) blighted. Next spring and every spring since I have applied half a bushel of hard coal ashes round each tree and I have never been troubled since. – *W. W. B.*

A Successful Fruit Farm.—Some Other Matters.

F. E. SKEELS, GRAND RAPIDS, MICH.

The November meeting of the Grand River Valley (Mich.) Horticultural Society was held at the farm of E. C. Phillips, whose Apples and other fruit have graced the tables of the society for years, and always superb. This place has all varieties of upland soil from heavy clay loam to light sand, is very rolling and of sufficiently high altitude to insure a crop of Peaches and other tender fruits each year. The principal orchard lies on a forty-acre plat, northwest of the home farm, and the south twenty acres of this contains as fine an array of Cherry, Plum, Peach, Pear and Apple trees as one can find about here. The original growth upon this forty acres was an immense stand of Oak grubs, and a portion of this primitive growth yet remains, soon to be cleared away to make way for a vineyard.

Mr. Phillips first came here some twenty-six years ago and commenced work in the city, but his health failing later he sought a location upon which to grow fruit. He was shown the place which he now occupies, which, at that time, could be reached only by a narrow foot path. The land was bought at fifty dollars an acre, cleared up and plans for a fruit farm laid, which have been developed until Mr. Phillips now has in bearing 4,000 Peach, 500 Apple, 100 Plum, 500 Cherry and 100 Pear trees, with several acres of Strawberries, Raspberries, and other small fruits sufficient for market and home use. His favorite variety of Peach is Foster, his orchard containing besides these Early and Late Crawford, Hill's and Hale's Early.

Mr. Phillips at the meeting displayed his favorite Apples in bushel packages containing Jonathan, Wagner, Northern Spy, Greening, Twenty-ounce, or Cayuga Red Streak, Red Canada King, and Ben Davis, and all but the last two were endorsed by the Society as the best to grow for market and home use. Mr. Phillips would never set another Ben Davis, because it is so poor in quality, and thought the Wagner the most profitable Apple for him to grow. In Cherries there were principally Early Richmond and May Duke, with a few other varieties of sweet and sour intermingled among them. Plums were represented by the Lombard, Pond's Seedling and Green Gage; and in Pears he had Clapp's Favorite, Flemish Beauty, Bartlet and Seckel. Souhegan, Gregg and Cuthbert Raspberries; and Crescent and Woodruff Strawberries on light soil, and Sharpless on clay, were vigorous; shown in clean rows.

About the first of February each year Mr. Phillips begins his pruning, and the work lasts about four weeks. He does the work himself and in the following order; Apples, Pears, Peaches, Cherries, painting the cuts made upon the Apple within two days after pruning. He does not plow his orchard, but keeps it thoroughly cultivated with ordinary cultivator or spring-tooth harrow.

At this meeting much fault was found with nurserymen, nearly every member having experienced some loss by having his order filled by replacing the varieties ordered by other varieties or from poor stock. Mr. Emmons, of Wyoming, had ordered a young orchard of choice varieties from a prominent nursery firm of Rochester, N. Y., and after waiting seven years for fruit, giving good care and attention, was rewarded by finding them all one poor worthless sort not ordered at all. Mr. Phillips recently purchased directly from headquarters twenty-five Hubbardston's Nonesuch and got only three trees true to name. He further said the finest orchard he had ever seen was produced by planting seeds where the trees were to stand permanently. Selecting the best one and top grafting with scions from known trees, and he thought this the only safe way of getting what was wanted. Mr. Garfield asked for a good, red, winter sweet Apple and was referred to Bailey's Sweet and Hendrick's Sweet. Mr. Phillips keeps his Apples for home use in bushel baskets in the cellar until wanted, and picked them this year the first week in October.

Mr. Alford had found that the Wagner would not do well on heavy clay and that the Baldwin was tender; for a good fall Apple he would plant the Jeffris. Oakland Co. Seek-no-further was spoken of by President Garfield as being very popular in some parts of the State, but not known in this vicinity. On motion the President was requested to obtain for the Society a barrel of these Apples to have on exhibition at the next meeting.

Not Over Production but Poor Distribution.

PARKER EARLE, PRESIDENT OF THE AMERICAN HORTICULTURAL SOCIETY.

It appears to me that there is no subject of more immediate practical interest to the commercial fruit-grower than this one of the means for a wide distribution.

All are well aware that our most important and staple fruits often sell at ruinous prices in our leading markets, not only on particular days, but for long periods. The shippers of Pears from California, of Peaches from Delaware, of Apples from Michigan, of Strawberries from Illinois, and of Oranges from Florida, can all testify to this. Yet I do not think that too many of either of these fruits of good quality have ever been grown in any of these states, nor enough for the markets that there were within practical reach of them, or the mouths that were hungry for them.

The fault is with our transportation, and our lack of any far-reaching and elaborate system of distribution. I think I have known good Oranges to sell at not much over one cent apiece at wholesale in Chicago, the market being overloaded, when there were a thousand towns within a day's ride of that city in which you could not buy an Orange for less than five cents—and not many at that—and millions of people within the same radius who did not taste an Orange in the whole winter. Yet the fruit distribution from Chicago is more closely worked than from any other American city.

There have been many winters in which the price of winter Apples has paid the producer very lean profits, and paid the large dealers more losses than gains, while at that same time an apple was a rarity, if not an absolute stranger, in half the farmers' homes and laborers' cottages in America.

The delicious Apricots of the Pacific coast are often left to decay in the luxuriant orchards that bear them for want of a market, while not one-tenth of the people of the United States ever tasted an Apricot in their lives. Yet, by using the best modern means of transportation, the most delicate varieties, picked ripe from the trees and full of excellence—and not, as they now are for long shipment, too green to be of high quality—can be laid down in all of the great eastern markets in very perfect condition.

The same difficulty exists with most of our fruits. So many of our available markets are not reached; and the fruit-growers suffer from an apparent over-production when half of the people go hungry for fruits which they need and cannot obtain.

This condition of trade is not found in the case of staple goods of other kinds, and manufactured articles; for all these goods are handled according to a most thorough business system. The more perishable nature of our fruits must of necessity modify and limit the same system of thorough commercial canvassing by which more durable products are placed constantly in every town and hamlet in the country; but I feel sure that regular fruit markets can be built up in thousands of towns that now get no supplies, except in the most irregular way, by an energetic system of canvassing.

This subject demands the serious attention of our growers and dealers.

Raising Winter Squashes.

E. W. L., SCHENECTADY, N. Y.

Any one who has room for a few hills of Squash should by all means plant the Essex Hybrid. It is a wonderful keeper; will keep until the middle of April. I have just (May 8th) cut the last one and find it partially decayed, though it was apparently sound on the outside.

Squash should be planted about the first of June in rich sandy loam. If the bugs trouble the young plants, drive them away by strewing pieces of muslin saturated with kerosene among the plants, and for several mornings pour a little more kerosene on the muslin, being careful not to touch the plants.

Later on, if the vines are troubled with the borer, which will be known by the vines wilting, near the root will be found a dark spot; with a penknife cut into the vine and dig out the worms and kill them, and then cover the spot with a little earth.

When the Squashes are ripe and ready to gather, about Oct. 1st, be very careful not to bruise them, handle them very carefully, and keep them through the winter in a dry, warm place. I keep mine in the cellar under the heater pipes on a table.

Last fall I bought a few Hubbard Squashes, but I lost them; they had been bruised and they soon decayed. Those who raise Squashes for the market should handle them very tenderly, as they are sure to rot if they are cut or bruised; and a variety that will keep until the middle of April I should think would be very profitable.

Cauliflower as a Market Crop.

D. N. LONG, ERIE CO., N. Y.

There is probably no other vegetable with which there is so much of uncertainty connected in the securing of a successful crop as with growing the Cauliflower. The season has much to do with its successful growth and maturity, and the treatment resulting in a good crop one season may result in almost complete failure the next year. Consequently prices are often two to four times higher one season than in the next or preceding one, and even in different parts of the same season. As a rule Cauliflower is a doubtful crop, and although prices are sometimes very high, yet the same time, attention, manure, and money devoted to the Cabbage crop will usually bring as great or greater returns, unless one has specially favorable facilities for its culture.

The seed of the best varieties of Cauliflower is very costly—about $8.00 per ounce this year,—and on this account most gardeners satisfy themselves at sowing time by putting in cheaper seed, and this is one common cause of failure. The Cabbage maggot is very fond of Cauliflower, destroying it when Cabbage next to it remains unmolested. This is the greatest hindrance to growing early Cauliflower, and it is a pest for which no effective remedy has yet been made known. The fly (Anthomyia brassica) lays its eggs about the stem of the plant at the surface of the ground. If the soil, eggs and all are removed every week during the laying season and replaced by fresh earth, its ravages may be greatly checked. As the fly lays eggs for the first brood from about the time Pie-plant is ready to use until it blossoms, two or three operations will usually save most of the early Cauliflower. For the main late crop the plant beds should be protected with mosquito netting and none

planted in open ground till the fly is done laying the first brood of eggs, after which little damage is done by the maggots.

A rich, moist but not wet soil, and moist, cool atmosphere are essential for good Cauliflower. Where these conditions, or at least some of them, are not found, it is almost useless to try to raise the crop, especially for market, as it is shipped largely from locations where it succeeds well to every market of importance.

In general, its culture is similar to that of Cabbage, except that richer soil and sometimes irrigation can be given it to advantage. If planted in rows both ways about three feet apart it can easily be kept clean. It should not be cultivated too late in the season, as its roots come close to the surface of the ground. It is sometimes mulched with old straw, corn stalks, or marsh hay.

In the final stages of growth about one-half of the leaves should be tied together above the head as soon as there is danger of its being colored by the sun. In cool, cloudy weather this needs little attention compared with hot, drying weather, when it is very difficult to get perfectly white heads of good size, as the leaves seem to wilt slightly and let the light in between them.

Successful Fruit Culture Demands Attention.

WM. H. YEOMANS, TALLAND CO., CONN.

In the case of fruits, these are not classed as cultivated crops in the general understanding of that term, and in far too many cases they are not considered so in actual practice, and so far as the necessity for a use of implements for tillage is concerned, the idea may be in a sense correct, but when it covers the question of neglect the case is different.

When any extent of surface is set to trees bearing fruit, or even otherwise, the growth and development of the tree requires a certain amount of nourishment, which must be supplied from the soil through which the roots extend. In order then that this demand may be reduced to a minimum, and that there be no misappropriation of soil fertility, a careful watch should be kept over the trees, and any superfluous or unnecessary growth of branches should be prevented by timely pruning; in that way the growth is directed in desired channels and where some benefit may be expected to result. In the development of fruit, its perfection depends upon the supply of its nutrient principles, and if the tree itself is lacking in vigor no desirable fruit can be hoped for. Then, besides attention to pruning, which is in one sense essential to vigor, there should be a care for a supply of fertilizing material applied to the soil bearing the trees.

Probably there is nothing better than wood ashes liberally applied. This mode of fertilizing is preferable to plowing and the cultivation of crops, for the injury done to the trees in the destruction of roots is often greater than the advantage gained by the fertilizer applied for the production of the cultivated crop.

The natural method is for trees to grow without cultivation, while their fertilization comes from the decay of leaves and fallen branches, which are left for that purpose; but in orchards these are conditions that seldom occur, and besides, a crop of hay is usually removed, occasioning a double draw upon the fertility. Is it any wonder under such unfavorable conditions that there should be a limited crop of inferior fruit?

And yet, failing to stop to consider the real cause, the farmer will exclaim "I don't see what ails my fruit trees that they do not do better; I don't seem to have any luck at all with fruit."

There is no effect without a cause, and when poor fruit is harvested it is safe to conclude at once that something needs attention, and a remedy for the evil is in order.

Manures; Their Composition and Use.

In the Transactions of the Highland and Agricultural Society of Scotland, Dr. Aitken, chemist to the society, gives the following description of manures and their use:—

Nitrate of Soda.—The most valuable nitrogenous manure. Perfectly soluble and immediately available for the nourishment of the plant. Feebly retained by the soil. Rapidly goes down to the subsoil, and improves its texture. Benefits deeply-rooting plants. Increases leaf and straw more than grain. Good samples contain 95 per cent. or upwards of pure nitrate of soda, equivalent to about 19 per cent. of ammonia. Five parts of nitrate of soda equal one of ammonia.

Sulphate of Ammonia.—A more concentrated nitrogenous manure than the preceding, but not quite so valuable to the farmer. Perfectly soluble, but not so rapid in its action as nitrate of soda. It is somewhat firmly retained by the soil, and not so liable as nitrate of soda to be washed out by heavy rains. It is, therefore, more suitable than nitrate for wet districts. Increases leaf and stem more than grain. Applied to grass, it checks the growth of clover and leguminous plants. Good samples contain 93 per cent. or more of pure sulphate of ammonia, equivalent to from 24 to 25 per cent. of ammonia. About four parts of sulphate of ammonia equal one of ammonia.

Dried Blood.—A nitrogenous manure, which differs from the above in being insoluble. It must be decomposed in the soil before it yields up its nitrogen to the plant, and this it does only slowly. The nitrogen is in the form of albumen, and is capable of yielding from 12 to 16 per cent. of ammonia.

Horn Dust.—An insoluble nitrogenous manure, capable of yielding 16 to 18 per cent. of ammonia. When in the form of fine sawdust it decomposes easily, and is a good nitrogenous manure even for cereals. Horn, when in the form of chips or coarse shavings, decomposes extremely slowly, and is not suitable for manure.

Shoddy or Wool Waste.—An insoluble nitrogenous material used by manure manufacturers as a source of ammonia in dissolved manures. It is capable of yielding from 5 to 10 per cent. of ammonia, but it is unsuitable for direct application as a manure.

Leather.—A very insoluble nitrogenous material, yielding about 9 per cent. of ammonia, used by manure manufacturers, but possessing no interest for the farmer.

Peruvian Guano.—The manure of fish-eating birds, and containing nitrogenous compounds, phosphates, and potash. High-class guano is rich in nitrogenous matter, a large proportion of which is soluble. As now imported, it is capable of yielding from 8 to 12 per cent. of ammonia, part of which is derived from ammonia salts, and part (less than 1 per cent.) from nitrates. Phosphates are low, seldom exceeding 30 per cent., but from one-quarter to one-half of the phosphate is soluble. The amount of potash is small, usually from 3 to 5 per cent. Low-class Peruvian guano as now imported is poor in nitrogenous matter, yielding only from 3 to 5 per cent. of ammonia. The phosphates are correspondingly high—viz., from 30 to 50 per cent., but the proportion of soluble phosphate is much smaller than in high-class Peruvian guano. Potash occurs to a very small extent—viz., about 1 to 3 per cent. Low-class guanos are formed from high-class guanos, by the washing out of soluble constituents by rain, etc., and their composition varies greatly according to the amount of washings they have undergone. Genuine Peruvian guano frequently contains a large proportion of stony insoluble matter.

Fish Guano.—Derived from fish-curing yards, and consisting of the heads and offal of fish, dried and ground. Properly speaking, it is not a guano. The name guano is properly applied only to the dung of birds. High-class fish guano contains nitrogenous matter, yielding from 10 to 12 per cent. of ammonia, but it is in the form of insoluble albuminous compounds, which decompose and become available as plant food very slowly. The phosphates range from 18 to 30 per cent., and are all insoluble. Low-class fish guanos are substances like the preceding, but contain less nitrogenous matter and more phosphates. They are simply bone manures, with somewhat more ammonia and less phosphate than ordinary bone meal, and having no real resemblance to a guano. Fish guanos are usually impregnated with fish oil, which detracts from the value of the manure. The oil varies from 3 to 10 per cent.

Bone Meal.—Chiefly a phosphatic manure, but containing also nitrogenous matter. Phosphates range from 44 to 53 per cent. according to the purity of the bones, and are insoluble. The nitrogenous matter is capable of yielding from 4 to 5 per cent. ammonia, and is also insoluble. There is usually 3 per cent. or more of oil in bones, and this retards its action as a manure. The finer ground it is, the sooner its action.

Bone Dust.—A coarser ground bone than the preceding. Crushed bones are still coarser ground.

Steam Bone Flour.—Bones which have been subjected to steam at high pressure for the extraction of glue or gelatine. The residue contains from 56 to 65 per cent. phosphates, and from 1 to 2 per cent. ammonia. It is friable, and can be crushed with the hand. It is able to be—and ought to be—ground to a fine flour. Owing to this latter character, it is the most active form of bone manure.

Pure Dissolved Bones.—Bones dissolved in sulphuric acid and dried with bone ash or bone char, or other bone material. It contains usually less than 20 per cent. soluble phosphate, about 10 per cent. or upwards of insoluble phosphates, and yields from 2½ to 3½ per cent. ammonia.

Dissolved Bones.—A compound manure, consisting of any kind of mixture of phosphatic and nitrogenous materials which can be dissolved with (or without) an admixture of bone, so as to produce a manure containing from 15 to 30 per cent. soluble phosphate, and from 1 to 3 per cent. ammonia.

Vitriolated Bones.—Bones which have been moistened with sulphuric acid, and thereafter allowed to heat in large heaps for a long time. Good samples contain from 6 to 12 per cent. soluble phosphate, with from 30 to 40 per cent. insoluble phosphate, and yield from 3 to 4 per cent. ammonia.

Superphosphates.—Phosphates dissolved with sulphuric acid. Their composition varies according to the richness of the phosphate from which they are made, and the extent to which they have been dissolved. High-class superphosphates are made from phosphates containing a high percentage of phosphate of lime, and are very thoroughly dissolved. They should contain between 30 and 40 per cent. soluble phosphate, and very little insoluble phosphate. Medium superphosphates contain at least 23 per cent. soluble phosphate, and below that are low-class superphosphates made from minerals poor in phosphate of lime, or insufficiently dissolved. Mineral phosphates exist in great variety, and contain very various proportions of phosphate of lime—viz., from 30 to 90 per cent. They are of use as manures only when they are ground to the finest flour. Even when ground very finely, some are so hard and insoluble as to be of no use as manures.

(To be Concluded.)

Fruit Evaporating in Niagara County, N. Y. Talks with Men in the Business.

On May 10th a representative of this journal started out to look up the fruit evaporating interests of Niagara County somewhat. In this county there is not a town but has one or more evaporating establishments in operation during the season of fruit. Some of the most successful of these are located in the northern part of the county, and this section was made the objective point on this occasion.

The first person visited was Mr. P. H. Corbin, who for six years has been in the evaporating business at Lewiston.

APPLES HAVE BEEN THE MAIN ARTICLE

he has here handled, although Peaches, Sweet Corn and Pumpkins have also been largely evaporated. A few years ago there seemed to be a growing demand for evaporated Pumpkins,a kind of flour having been made from them, but the promise was never fully realized, and last year less was done in evaporating this vegetable with the demand lighter than ever before. In the other articles in Mr. Corbin's line there has been a marked increase in the product and its consumption from year to year, except Peaches, which have been hard to procure in late years. The public are beginning more and more to appreciate evaporated fruit as a cheap and wholesome article of food. According to Mr. Corbin, however, the increase in consumption is mainly in northern cities and regions, the people of the South not seeming to get in the way of using dried fruits. Even Philadelphia is a poor market. Large quantities are consumed at sea, while the export trade to Europe, South America, etc., begins to assume large proportions.

Mr. Corbin has given considerable attention to putting upon the market a

HIGH GRADE OF EVAPORATED FRUITS,

mainly in the line of Apples, with a view to securing an extra price. Still he has not met with the encouragement he had hoped for, and now is of the opinion that it is better to confine one?s attention to a good grade of A 1 fruit. His extra article was secured by greater pains in the selection of the fruit, in the trimming of the stock—having two trimmers to one parer instead of the usual one, and in cutting a larger core with all other details down to packages. But with all this he could count on but about two cents extra per pound when the increase should have been four. His fruit, packed mostly in 50 pound boxes, has been in the main exported. All his boxes are plainly marked with his name and address, and he occasionally hears direct from consumers, even those in Europe.

In Mr. Corbin's establishment the Wilson evaporator made at Muncie, Pa., is used. Last year he started his evaporators early in October and kept them going nearly four months. In that time he

CURED 142,000 POUNDS OF FRUIT,

3,000 boxes, besides cores and skins. There was little loss from rot in the fresh fruit, as the season was favorable to its keeping. The results of the season's business while satisfactory was not as

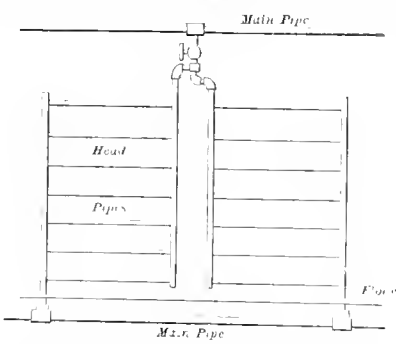


FIG. 2. END ARRANGEMENT OF STEAM PIPES.

much so as the year previous, when the high price of 16 cents per pound placed all evaporator men in the best of spirits. Last fall the price started off at 12 cents, but it has for good Apples reached as low as 8 cents. From five to eight pounds of evaporated fruit are counted on from a bushel of Apples, the quantity varying with the variety.

Mr. Corbin expressed the opinion that the outlook for fruit evaporating as done on an extensive scale is less hopeful than when it is conducted on a smaller one by the fruit grower himself as one branch of his business, with perhaps also working up some neighbor's fruit besides, and for this he gave several reasons, one being that to fit up

A LARGE ESTABLISHMENT

required large capital, and which then laid idle all but a few months in the year. Second, the

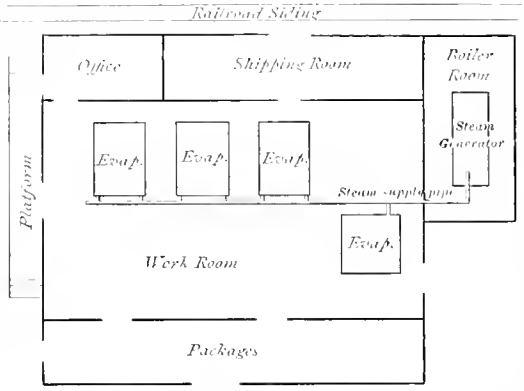


FIG 1. GROUND PLAN OF HARDING & SWEETING'S STEAM EVAPORATING BUILDING, SOMERSET, N. Y.

difficulty of getting insurance. Third, the rapid increase of small evaporators. While remarking on the great increase of this business as done on a small scale, he referred to the fact that there was far less sun-dried fruit in market than formerly, owing to the extremely low price that had been forced upon this, by the superiority of evaporated fruit. The price of the sun-dried article had frequently fell to 3 and 4 cents per pound. There was some demand for sun dried Apples for making a certain coloring material.

As regards

BLEACHING EVAPORATED FRUIT,

the sulphur process was mostly in use. Salt water has sometimes been employed, Mr. Corbin said, as a substitute, dipping the fruit into it immediately after paring and coring,with the effect of preserving the light color, but a salty taste was always perceptible in such fruit. In his opinion there was not the least possible objection to sulphur bleaching if it was done with the slightest regard for careful work.

The next place visited by our representative was that of Harding & Sweeting at Somerset Station (Barker P. O.), P. L. Pallister superintendent. This is one of the most extensive establishments in the county, having a capacity of upwards of one thousand bushels of fresh fruit per day, and employing over 100 hands in the season. It has been in operation for six years. The proprietors are also largely engaged in evaporating at Olcott and at Lyndonville in this state.

This establishment at Somerset is especially interesting from the fact of the successful experiments that have been made in

EVAPORATING BY STEAM HEAT.

So satisfactory indeed has this process been that the proprietors have become completely converted to the system, and hereafter will employ it almost exclusively. The advantages of steam over flue heating as demonstrated here are: Safety from fire, thus being able to secure insurance at low rates; ease of management, there being but one fire (a boiler) employed for all the evaporators instead of one fire to each evaporator as on the old plan; economy of fuel, as cheaper soft coals can be used, while with dry heat evaporating hard coal only is suitable; product not subjected to injurious gases and fumes.

Four large steam evaporators are employed in the main building of this firm, a ground plan of which building and showing the location of the different rooms and apparatus is given in Fig. 1. The size of the building is 64 by 70 ft. Three of these evaporators are known as the Shelby Steam-heat evaporators, and one is a Rice apparatus. A view of the end arrangement of the heater pipes of the Shelby evaporator is shown in Figure 2. From each length of head pipe, as here shown, there are eight one inch pipes side by side, extending to and connecting with similar heads at the other end, said pipes being slightly over twelve feet long. It is the hot steam passing through this system of pipes, and which is fed by a main pipe from the boiler, that creates the heat for drying the fruit. Between each surface of pipes and the next one to it there are three slides for holding the fruit racks. An inverted funnel cover terminating in a chimney serves to draw off the moist air that has passed through the fruit. Steam for the four evaporators in this building is supplied by a 50-horse Dempster steam generator made by the Dempster Engine Works, Buffalo, N. Y. The

CAPACITY OF THESE EVAPORATORS

is about fifteen hundred pounds each of dried fruit in 24 hours. In a building some rods away from this one Messrs. Harding & Sweeting also have four large dry heat evaporators, one a Williams the others constructed after a pattern of their own. A storage house having a capacity of 3,000 barrels in the basement for fresh fruit is located convenient to both buildings.

This firm engages mainly in evaporating Blackcap Raspberries, Apples and Peaches. Of the former they themselves are extensive growers, having in this place a bearing plantation of 18 acres mostly Ohio Blackcaps, and this spring 22 acres more were planted. They prefer the Ohio to all others for its hardiness, productiveness and fine appearance, either when evaporated or for selling fresh. Peaches are rather more abundant about Somerset than in most other parts of Niagara County. As a rule first class Peaches are not evaporated, they being more profitable when sold in a fresh state.

For preparing Apples the Eureka parer made at Antrim, N. H., and the Pease Slicer, made at Ontario, N. Y., are mostly used, and which together produce what is known as punched stock. This firm last year paid from 15 to 20 cents per bushel for Apples, using shaken fruit and windfalls. No attention is paid to sorting the fruit except for size, or to turning out more than one main grade of stock.

Mr. Pallister, the superintendent, in answer to the question of the

ADVANTAGE OF LARGE ESTABLISHMENTS

to the particular region in which they are located, said that much of the fruit for which from 15 to 20 cents a bushel is now gladly paid, formerly netted the growers not more than five cents per bushel for cider making, the best use to which it could be put. In some years the evaporators of this section not only exhaust the supplies of the region about, but fruit is shipped in by the car load from other regions, even from as far as Michigan. Two years ago when winter Apples fell to 75 cents per barrel, and evaporated fruit was higher in proportion, the evaporators were started up in mid-winter and converted many of the former into the latter.

Bleaching the fruit is done with brimstone, in a bleaching box, to which the fruit when first

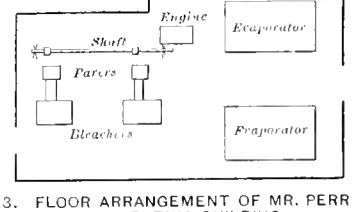


FIG. 3. FLOOR ARRANGEMENT OF MR. PERRIGO'S EVAPORATING BUILDING.

placed on the racks is transferred. Fifteen minutes is considered the right length of time for it to be in sulphur fumes. Over-bleaching of Apples leads to a yellowish color.

Another establishment visited was that owned by J. E. Perrigo, of Barker Post Office, near Somerset. This one we looked upon as being more nearly representative of

THE GENERAL WANT IN THIS LINE

than others visited in this trip, because of being conducted on a scale suited to the requirements of the ordinary fruit grower who evaporates fruit for himself and neighbors,as an adjunct to his business as a grower. In the present case Mr. Perrigo has been both the builder of the works and the manager of the evaporating in all its details. By the aid of the accompanying drawings we shall attempt to describe his establishment and its workings.

The ground plan of the evaporating building (which is 40 by 24 feet, less a jog), together with the location of the apparatus in it, is shown by Figure 3. The capacity of the works is one hundred bushels of green fruit per day, and some fifteen hands are employed.

The evaporators, of which there are two, were designed and built by the proprietor, and in his estimation meet every requirement of a first class drier. They are wood burners, but could easily be fitted for the use of coal. Mr. P. considers wood, mostly hard, at $2.50 per cord, the price he pays, cheaper than coal at $5 a ton. He can get insurance on his works at 1½ per cent for three months. Would see no advantage in changing to steam for works conducted on the scale he practices.

In figure 4 is shown a side view of the

NON-PATENTED EVAPORATOR

referred to here as being in use. Its floor size is ten feet by five feet. A side view of the furnace is also shown in the same figure, and a view of the latter from above in Figure 5 the letters indicating parts corresponding in both. The furnace *a* consists of a heavy sheet iron drum 20 inches in diameter and nine feet long, and having the door at *b*. In this furnace 4-foot wood is burned. *c c* are two side pipes 5 inches in diameter which carry the smoke and heat (Figure 5) from the rear end of the furnace forward to an 8 inch pipe *d*, that opens into the smoke stack outside of the evaporator. *e* is an opening underneath the furnace for providing a fresh air draft, and causing the upward circulation. *f* represents the floor of the evaporating house continued as a platform between the two driers, shown in Figure 3. *g* represents the side slides which enclose the drying racks, *h*, when the work is in progress. These slides move up and down in slots, and for easier handling each has a rope with sand bag weight attached, the weight passing over a pulley fixed to the rafters of the building. The racks are 3 feet by 2½ feet in size and two inches deep, with bottoms of galvanized wire cloth five strands to an inch, and which costs about five cents per square foot by the bale. *i* represents the dome and *j* the chimney. The parts of the evaporator nearest to the furnace are lined with sheet iron for safety.

IN THE LINE OF MACHINERY A

one-horse oil-burning engine made by Rochester works furnishes the power for the parers and corers, two of which are used. Of the latter the kind preferred is the Taber machine made at Wilson, N. Y. It pares and cores close, and has the merit of doing uniformly good work with large or small fruit. It turns out what is termed ringed stock, a kind that Mr. P. has always been able to put upon the market to advantage. Two of the Devol color setters or bleachers are used, one with each parer, as shown in Figure 6. This machine is made at Reynold's Basin, N. Y., and gives entire satisfaction. Its manner of use is this: The bleacher is set at the end of the trimming table, which latter receives the rings of fruit as they fall from the parer. The bleacher has two drawers of a bushel each side by side and with screen bottoms for fruit, with an opening into each drawer from the top and near the trimmers' table. Brimstone is burned from below the drawers, while a stove pipe from a hole in the top of the bleacher leads to the chimney, causing a draft of the brimstone fumes through the fruit, and their escape. As the trimmer handles and cuts the fruit she drops it into one drawer of the bleacher through the hole above until this is full, and then changes and fills the other drawer. When the second has been filled, usually in five minutes, drawer No. 1 is removed and again filled, the idea being that each drawerful is subjected to the constantly rising brimstone fumes during the time required to fill one drawer. Ten cents worth of brimstone suffices for the two bleachers for twenty-four hours. In the evaporating of the fruit one bushel of Apples fills five racks, and the racks are shifted every half hour. The temperature preferred in the evaporator is 190 to 200 degrees, the higher degree being desirable in bright airy weather. During such weather the capacity of the works is nearly double that of damp days, with poor drafts, which fact leads Mr. P. to think he

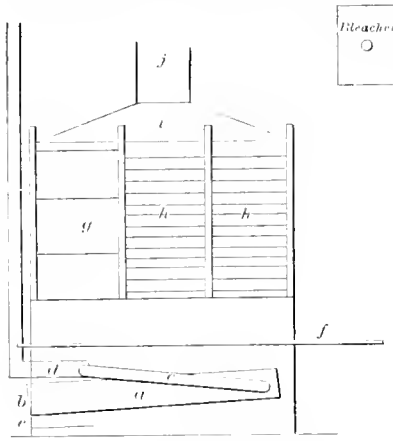


FIG. 4.

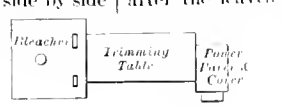


FIG. 6.

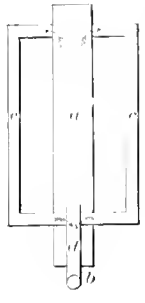


FIG. 5.

Fig. 4. Side View of Non-patented Evaporator. Fig. 5. Top View of the Heater. Fig. 6. Position of Bleacher, Trimming Table, etc.

WILL INTRODUCE FANS

run by the engine into his evaporator chimneys this season to increase the draft when desired. At this evaporator Apples are the main thing cured and Black Cap Raspberries next. Of the former he buys many, paying usually 20 cents for good mixed windfalls. Russets of all kinds are superior to other varieties for evaporating, as they yield usually 8 pounds of cured fruit per bushel as against about six pounds for other kinds. For Raspberries he pays about 5 cents per quart delivered. All parts as well as sizes of Apples are evaporated, the parings and cores making what is termed "jell stock," and selling for from 1 to 4 cents per pound, the small Apples unfit for paring, as "chopped stock," and selling at about the same price. These cheap grades are said to be exported largely, being used abroad in the manufacture of the "pure wines" that are so extensively imported for the American trade.

The entire establishment of Mr. Perrigo's cost not far above $1,200 and has proved a very satisfactory investment. Apples are packed in 50 pound boxes except the jell and chopped stock, which is shipped in barrels. Raspberries are shipped in barrels. Most of Mr. Perrigo's sales are made through Messrs. Knight & Gordon, 315 Washington street, New York.

Grape Grafting.

HENRY LULLS, YOUNGSTOWN, N. Y.

Since trimming the grafts set last spring, many of which have made a growth of 20 feet, completely renewing worthless vines with valuable varieties, I believe some of your readers who have vines of worthless kinds may be induced to make a trial of Grape grafting themselves. To such I will make a few suggestions.

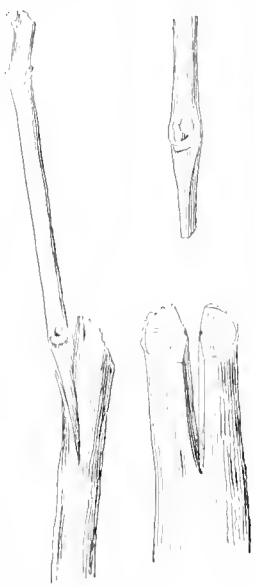
1st. Grape-vines can be grafted with a greater certainty of success by a person not skilled in grafting than any other stock.

2d. The entire secret of successful Grape grafting lies in caring for the cion from the time it is cut from the vine and placed on the stock until it has callousued and united. The first part of this may be accomplished by cutting soon after the leaves fall and keep in sawdust or the like in a cool cellar, or better, an ice house until united.

The second part is in shading the graft after it is placed on the stock until growth has commenced. I have accomplished this very well by sticking two wide shingles on the south side of the graft, slanting them toward the north; the shingle should be placed in V shape. Old Peach baskets without the bottom will answer the purpose admirably placed over the stock grafted. This matter of shading I consider the most important part of Grape grafting. With me on heavy clay loam soil I have when shaded entire success, when not shaded entire failure.

My plan of grafting is as follows: I cut the vines off within three feet of the ground before the flow of sap commences. This leaves but few buds on, and in so doing the vitality of the stock is not weakened. The time I prefer is just after the buds have first opened. I then clear the earth away from the vines below the first tier of roots and insert the graft. I then cover all parts where stock and graft come together with paste of common yellow clay, around this I wind a strip of cotton cloth. The earth is then brought back again, packing carefully where the union is made by grafting. The loose, fine soil is drawn to the top of the cion. When completed it resembles a broad Potato hill. A shade as described is then put over it and the work is complete.

This plan of grafting works well on stock from ⅜ to ¾ of an inch smaller. Stock may be splice and tongue grafted as shown in Dr. Staymun's article in the February issue. On stock of one inch and over I prefer cleft grafting. This is done principally the same as the above, and differs only from ordinary to cleft grafting in the shape of the graft and in the manner of making the cleft in the stock. This is done by first running a fine saw down the stock. A one and one-half inch piece is then cut on each side, as shown in the lower right hand engraving. The graft is made by cutting a thin slice from each side so that it will fit the stock as shown directly above in the cut. By making a heavy bottom to the cion this it can callous before drying out, as sometimes may happen in case it is wedge shaped. In putting in the cion no wedge is used, it is merely pushed down. The entire part is covered with a paste of clay, and a cotton bandage wrapped around and soil replaced as in the previous case.



Mr. Lulls' ways of Grafting Grape-vines.

The side grafting, as illustrated, is the simplest process of grafting of any, and on Grapes as well as all other stocks it works well. Cherries, Plums and Apricots are grafted very readily by this means. The drawing (to the left) shows exactly how the cut should be made, and by springing the top of the stock back the cion may be put in place very easily, when the top springs back and holds it firmly there. It will be seen that the sap wood is bound to cross at some point, which makes success certain.

684. **Acacia Culture** The seed can be sown at any season of the year, early in the spring being preferable. Previous to sowing, soak the seed in hot water for several hours, then sow very thinly in a well drained pot or pan filled with light loamy soil, place in a warm, moist situation as close to the glass as possible, and as soon as the young plants are strong enough to handle they should be carefully removed and potted off into two or three-inch pots. As the seeds of some species vegetate much sooner than others, care must be taken to avoid injuring those that remain. Keep the young plants close for a few days, or until they have taken hold of the soil, then place in a light, sunny situation and grow on as rapidly as possible. Re-pot as often as they require it, giving good drainage. The strong-growing varieties will thrive in a compost composed of two-thirds turfy loam and one-third well decayed manure, while for those of delicate growth a liberal addition of sharp sand should be added. As soon as the plants are large enough they should be placed outside during the summer season. Water must be carefully and thoroughly given whenever necessary, and when the plants are inside they should be frequently syringed. After the plants cease blooming they can be trimmed back into shape, and those that require it re-potted. Full exposure to the sun during the summer season is essential to blooming them well. C. E. P.

671. **Bagging Grapes.** Bags made of good manilla paper are best. No. 1 bags of standard size are large enough for Delawares and those varieties that produce similar sized clusters, while Nos. 2 and 3 will be needed for medium and those of larger size. CHAS. E. PARNELL.

685. **Sweet Potatoes at the North** Sweet Potatoes can be grown at the North, but with little or no profit. They require a rich, light, warm soil, and in this vicinity are generally planted in rows or ridges four feet apart, the plants standing one foot apart in the row. After growth commences, all the cultivation they will require will consist in keeping them well cultivated. And the vines should be moved occasionally, in order to prevent them from rooting at the joints. As the plant is of tropical origin, the slips or sprouts, as the young plants are termed, should not be planted out until June first. C. E. P.

The Fancy-Leaved Caladiums and Their Culture.

W. FALCONER, GLEN COVE, N. Y.

The fancy-leaved Caladiums are among the richest and most showy of garden plants, and amenable to cultivation by anybody. Although indigenous to tropical South America, they have decided seasons of rest and growth, and this enables us to grow them as easily as we may a Dahlia or Gladiolus, and without a greenhouse. We grow them in summer and rest them in winter.

Most florists who deal in a general collection of plants have Caladiums for sale; the average price is 20 cents each or $3 a dozen. From October to April the plants are sold in the form of little tubers. After April they are disposed of as growing plants in pots. Some kinds are far more expensive than others, and the price of all sorts differs according to the size of the tubers, large tubers costing more than small ones. But our American prices are moderate compared with those of European firms, who charge from 50 cents to $5 a plant.

After receiving the tubers, say in April, pot them singly into small pots, using turfy porous soil, and keep them in a warm place in the window and away from drafts, and shaded from sunshine. In May we may keep them in the window, or out on the piazza or in a cold frame, always guarding against winds, draft and sunshine. When they have filled the small pots with roots repot into larger ones using open, turfy soil and some rotted manure. Caladiums like an abundance of water during their whole season of growth, hence the great necessity of porous soil, so that the water can pass off readily; and although they are partial to rich soil, I find it is better to give the pots a good mulching of rotted manure than to mix much manure in the potting soil. Use lots of drainage in the pots. Probably the Caladiums will continue in active growth till August or September, when they will show an inclination to die down; then lessen the supply of water, and gradually let them go to rest by stopping watering altogether.

During the summer months we may keep the Caladiums on the piazza or plunged out-of-doors in a sheltered, partly shaded nook in the garden. Indeed, we often have capital success with them when we plant them out in the garden about the first of June; and associated with Rex Begonias they make a pretty clump. When planted out they continue longer in fresh growing condition than they do when grown in pots.

As greenhouse plants they are superb and come in during the summer months at a time when our greenhouses are considerably emptied of their usual contents.

During the winter months keep the tubers dry. You may either return them in the pots in which they had been grown during the summer, or, for room and convenience sake, shake them out of their pots and store them close together in a flat filled with earth or sand, and keep them in the cellar, cupboard, or anywhere else that is handy, always observing that the minimum temperature is not less than 50°. More Caladiums and Gloxinias die during winter on account of having been wintered in too cold a place than from any other cause. And be very particular to guard the tubers from rats and mice, which are very fond of them.

In spring don't let your ambition to see them grow get so far the better of you as to induce you to start them early. Don't start them to grow till you are certain that you can afford them a night temperature of at least 60°, and without the aid of a greenhouse or hot-bed you cannot well do this before the end of April.

FANCY-LEAVED CALADIUMS.—THE FOLIAGE OF VARIOUS KINDS.

The following are capital sorts and quoted by our florists at $3 per dozen:

Boildieu. Green towards the outside, flamed with crimson in the middle.

Candidum. White ground, green ribs.

Chantini Splendens. Spotted with rose and crimson.

La Perle du Bresil. White, tinted rose, transparent, green veins.

Louis Duplessis. White ground, green margin, red veins.

Md. Alfred Bleu. Green ground, white blotches, red veins.

Md. Fritz Kachlein. White ground, purple ribs, green veins.

Meyerbeer. White, green veins, red ribs.

M. A. Hardy. White, rose tinted, green spotted.

Napoleon III. Green, flamed crimson.

Prince Albert Edward. Greenish, dotted white, crimson veins.

Triomphe de l' Exposition. Green, flamed with bright crimson.

While the above are bold-appearing plants, the gem of the gems, *C. argyrites*, green and white, grows only to a height of six or ten inches, and makes one of the prettiest pot plants imaginable. It costs no more than the others. A capital companion plant to Argyrites is *C. minus erubescens*, the leaves of which are green, flamed with crimson. But very few florists advertise it.

Among the sorts that now take the leading part at our principal exhibitions are *albolutcum, Curinatum, Comtesse de Maille, Cyphel, Gerard Dow, John R. Box, Leplay, Md. Marjolin, Princess of Teck, Reine du Portugal, Scheffer, Sirius.*

A Few Noteworthy Roses.

BY MRS. M. D. WELLCOME.

I do not mean to be understood by this heading that there are not many Roses worthy of note, but it is of those recently introduced and not yet widely known that I would write. "Her Majesty" rather took the lead last year; a Hybrid Perpetual, the rival of Paul Neyron, the largest Rose grown This Rose is a seedling originating with Mr. Bennett of Stafford, England, and was introduced in this country by Mr. C. F. Evans, of Philadelphia the importer also of the famous Hybrid Tea Rose, W. F. Bennett. The color of "Majesty" is a delicate satiny pink, very sweet. This Rose has given very general satisfaction.

The leading popular Rose of the present year is undoubtedly "Mrs. John Laing," which also comes from Mr. Bennett, and laden with honor, across the sea. It was awarded the gold medal at the National Rose Society in England, July, 1885. I will give the testimony of one of our own Horticulturists respecting it. Mr. F. L. Temple, of the Shady Hill Nurseries, Cambridge, Mass., says: "This is undoubtedly the finest Hybrid Rose introduced in the past ten years; its color is a beautiful soft pink; it has a most delicious fragrance and is of exquisite shape and large size; a strong grower, not subject to mildew, and—which is very rare in a Rose of its size—is a constant and abundant bloomer. I grew it last year at Shady Hill—the first season of its appearance here—and the results were so surprising that I will relate them. Plants six inches high were set out June 14th, and gave three crops of magnificent blossoms, about two shades darker than Baroness, of the most exquisite and powerful fragrance, and, finally, of entirely unusual substance, a point of great importance in an outdoor Rose, as it enables it to keep in good condition in the hot sun for several days. It gave me a full crop of the grandest show flowers every three weeks."

This is very high praise, and so assured is Mr. Temple of its perfections, he guarantees to replace the cost to anyone who is not thoroughly pleased with Mrs. John Laing.

Other specially valuable Roses not novelties of this season, but treated for a few years, are Pierre Guillot, the best Hybrid Tea, and Antoine Verdier, also a Hybrid Tea. Both extra fine, and constant fine bloomers.

For Yellow Roses we have to go outside of the Hybrids. The best hardy is Persian Yellow, very bright color, small but very

double, and a very early bloomer. The finest yellow Teas are Perle des Jardins and Etoile de Lyon; large golden flowers borne abundantly all through the season.

A French Flower Balloon.

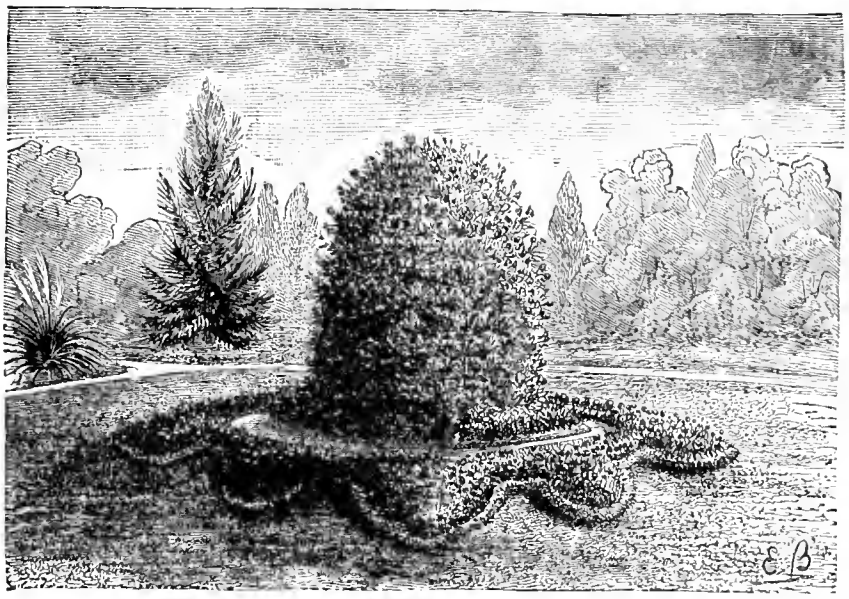
What may be called a novelty in the style of using summer bedding plants is shown illustrated on this page. The figures were re-engraved from the pages of the French journal, Revue Horticole.

The mound as here shown is adapted more especially for use in parks or other extensive grounds, but some modification of it might also come in very well in grounds less extensive. As a novelty in summer embellishment, what could be more pleasing than such an arrangement on a small scale, using for plants such as Moneyvine, Othonna, Petunias, etc.

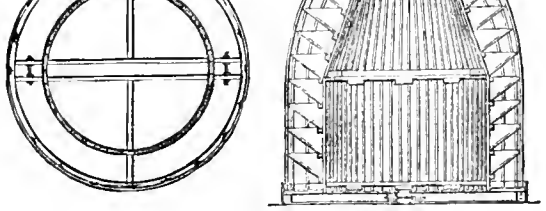
As will be observed by the lower engravings, the balloon consists of a frame work to contain a series of shelves or boxes which, filled with soil, are planted with flowering and ornamental leaved plants.

The base is made in two parts, of T shape, bolted together. Upon the base is placed a kind of oak cask, larger at its base than its summit, and with staves or ribs set at wide distances in order to allow the free passage of rain water, and that from the sprinkling cans. The cask is made in two parts, one with upright staves, and one with staves smaller at the top than at the bottom, the sloping part placed on the top of the other, and fastened together as shown in the engraving. The whole is covered with an iron rib-work made in two parts and forming a great balloon about eighty inches in diameter and one hundred inches in height. The upper extremities of the iron ribs are joined to a large iron hoop, affording space wherein to set a strong Palm or other handsome plant.

Between the cask and the rib-work is placed a series of inclined shelves, fastened at their lower edges to the cask, and at their upper to the iron ribs, thus forming stages or boxes to hold soil in which to set plants.



A FRENCH FLOWER BALLOON.



INTERIOR CONSTRUCTION OF THE BALLOON.

A balloon of this size requires from eight hundred to a thousand plants to fill it. A balloon planted with scarlet Geraniums and placed in the middle of a large lawn is said to produce a fine effect. But a great variety of plants can be employed, and there is no end to the changes that can be made.

Considerable care will be necessary to keep the plants supplied with water, as the soil in the boxes will evaporate it more rapidly than that at the surface of the ground. A firm and level foundation should be secured on which to place the structure.

Flower Chat by "Elders's Wife."

I never had appreciated Verbenas until last fall. I had a fine mixed bed of them, and when the frosty nights of autumn came it seemed too bad to leave them out to die by the first frost, and I would like to have taken them all indoors if I could, but I had to content myself with taking a few cuttings which I had no idea would grow anyway, but they grew finely, and were quite nice plants before those out-of-doors finally yielded up their lives to the frost king, in fact they were among the last things to succumb, and made their corner of my little garden bright until well into November, and in January the plants raised from cuttings taken in September were blooming. They do nicely in a south window, close to the glass, if the green aphis can be persuaded to leave them alone.

Does everybody know what a splendid vine the Scarlet Honeysuckle is? If not let them plant one, they cannot help but be pleased with it. I have one, growing in rather poor soil (a rather stiff clay loam), and receiving very little care or attention, which was in continuous bloom from early in June until late in November, and the clusters of bright berries remained through the winter to remind me of the departed glory of the flaming flowers and lustrous green foliage of summer.

Some seeds are so difficult to get to germinate that the amateur frequently fails in getting them to do so at all. Some cultivators recommend soaking them in water for hours, or even days, but I like this plan better: Plant the seeds in pots or boxes of fine rich earth, and if only slow to start like Cyclamen, Smilax, etc., water the soil with water as hot as one can put the finger in. Such hard shelled seeds as Lantana and Canna will bear it boiling hot (Of course the drainage of the pots or boxes must be good). Subsequent watering should be made with water as warm as the hand will bear.

Some Southern Plants.

MRS. T. A. R. W., RAYMOND, MISS.

Passiflora incarnata Grenadille, or as the Southern Negroes call it, May Pop, on account of the fruit or seed pods which hold the seed encased in a juicy pulp something like the Pomegranate, sweeter and more fragrant. The vine dies down in winter and springs up in spring, as soon as the ground is warm. Flowers shaded from deep violet to mauve and white. The crop cream and pale tinted green. A true passion flower; native of the Gulf States.

Plumbago Ceylonica. White Climbing Plumbago from Ceylon, half hardy in latitude of Mississippi. This Plumbago is a fine bedding plant for summer, a good winter bloomer, and the small white flowers are very effective worked up in floral decorations. It seeds abundantly as a common annual; makes a large plant the first summer. I have never grown it from slips. I think it is propagated from the young offshoots which appear.

Yucca Aleofolia, called the Spanish Dagger, from its sharp pointed leaves. This Yucca is perfectly hardy. Stands the hardest treatment. I have seen the plants thrown in washes and they would root from the trunk without any earth thrown over them. Up to three years this is a very effective plant for the decoration of houses. As far south as New Orleans, where the Fan Palms fill the swamps, this Yucca is used for decorating the Opera Houses throughout the winter. Its seed germinate readily.

Lagerstroemeria Indica. Vick (who is good authority above Mason and Dixon's line) says the Crape Myrtle is propagated like the Grape-vine. In the South the Crape Myrtle is a shade tree. I have never known it killed by cold. Here we have severe cold weather. The ground is often frozen for a week, and the next week is like balmy spring time and the most trying time on tender plants. We grow the Crape Myrtle from offshoots taken up last of February or 1st of March, just before the leaves burst out. It is grown from seed; and in New Orleans great quantities of the seed is sold. I had a seedling which came up in my greenhouse in February. I let it stand and in June it was 6 inches high, one mass of purple blossoms. They say the trees on my place were the first brought to Mississippi. They were large 36 years ago. The tree is long lived.

632. **Shortening Old Rose Bushes.** To render your bushes shorter than at present we would advise working mainly on the new shoots that annually come up from the crown. This we would accomplish by cutting away the older canes somewhat freely to give the young shoots more room for development. Then a year later we would cut back these fresh shoots to six or eight buds, and again make a free cut at the old ones. By bending over a portion or all of the old shoots and securing them in this position more buds would start from the crown as a result, and thus admit the sooner of making over the bushes.

724. **Salt for Grape-vines.** Salt would only have value as a fertilizer of Grape-vines on dry sandy soils by furnishing them with more moisture. A slight application would do no harm on any soil, and generally no good. On reasonably good soil good thorough cultivation is all the native Grape-vine requires. On very poor soil thoroughly rotted manure early in the fall and unbleached ashes in June are best.—D. B. W.

725. **Bark Coming off Apple Trees.** It is caused by injury from extreme cold, and the expansion of ice in the sharp crotches or forks by cold splitting the wood and bruising and killing the bark. Such ruptures and bruises are then often attacked by the woody aphis or Apple-root louse, causing still further damage. The remedy is to hang something in the forks that will shed off the water in the fall of the year, to remain over winter and thus to kill the lice.—D. B. W.

The Dandelion.

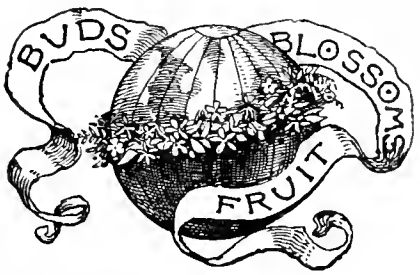
A little child was playing,
Her eyes her joy betraying,
And cheeks so rosy;
When all at once, beside thee,
She cunningly espied thee.
And lisped, "A Posie "

A gard'ner who was hoeing,
And felt him weary growing,
Sat down to rest;
At once he 'gan to hate thee,
To threaten and berate thee,
And growled, "A pest!"

Black Cherries.

Thick as rain-drops hang the satin Cherries
On each bough of huge, o'erladen trees,
Leafy weight, that half the fruitage buries,
Set against the warm, caressing breeze.
Ardent fruit of ardent heat—a yearning
Fills my heart at all this brave array.
—*Mrs. Goodale.*

You love the Roses—so do I. I wish
The sky would rain down Roses, as they rain
From off the shaken bush. Why will it not?
Then all the valleys would be pink and white,
And soft to tread on. They would fall as light
As feathers, smelling sweet; and it would be
Like sleeping and yet waking all at once.
—*George Eliot.*



Bag the Grapes.

"Woodbanks" on Niagara.

There is beauty in a curve.

The editorial office has been moved.

Tree Pæonies are too seldom grown.

Have you planted some Nasturtiums?

Mildew is one sign of an exhausted soil.

The sun on wet leaves may cause blisters.

The Mulberry is propagated from fall set cuttings.

Annual Chrysanthemums come better in a rather poor soil.

Any management that excludes common flowers is faulty.

To cut off flowers as they begin to fade will promote freer bloom.

Grow some tree, plant or crop so well that you may well be proud of it.

The same vegetables should not be grown on the same plat for successive years.

To pinch all flowers from Strawberry plants is one way of increasing layer propagation.

The Ohio Ever-bearing Raspberry is unquestionably the favorite throughout Niagara Co.

To be most effective the Persian insect powder should be applied when plants are dry.—*T. H. L.*

No Quarter. A steel rake with sharp teeth and handled by an active man leaves little chance in the garden for weeds.

Every subscriber is sure to derive benefit from the POPULAR GARDENING Experimental Grounds. Now is the time to subscribe.

The Tansy plant, with its very ornamental leaf, may be rendered decidedly handsome by cutting out the flower shoots as they appear.

Treating the Ice Plant. This plant, *Mesembryanthemum crystallinum*, is quite effective for vases if the buds are kept down.—*Mrs. Lovejoy.*

Deformed or "Bull-head" Perle Roses. Mr. W. J. Palmer of this City says that such are produced only on young plants; his old ones yielding perfect flowers.

We like bone meal for pot plants. It is effective as a top dressing or mixed with the soil. It is odorless. It can be bought for 4 cents a pound in fifty pound lots.

To the Trade and the Public. This journal's new grounds are not commercial in their character. Not a tree, plant or seed shall be advertised and sold from them.

Roses should not stand in sod. If the reader's bed is so situated, let him now invert the sod, and from henceforth give free culture, with a liberal dressing of old manure yearly.

A Rose jar, says the American Cultivator, may be made of Rose leaves gathered in their prime and free from moisture. Mix with them the essential oils of lavender or rosemary.

Sport in a Fern-leaved Beech There is a curious case of sporting on one of the branches of my Beech. The branch is two or three feet above where the improved part was budded on the stock, but the leaves are not cut at all.—*W. S. L.*

The Best of All. Of the numerous important steps taken by this journal at intervals since it was founded, to increase its circulation and influence, our readers, we think, can easily agree with us that none other can compare in significance with that of purchasing and conducting a fruit farm, garden and experimental grounds in the sole interests of the paper and its readers.

Lime for Grape Rot. For three years I have kept my Grapes from rotting by scattering air slaked lime over the vines and Grapes every two or three weeks. Scatter any time after the Grapes are formed, or when the rot begins. I have vines sixteen years old; the Grapes had always rotted, but lime has made me three crops of splendid Grapes. With me it appears to be a panacea for all ills.—*R. S. Martin, Clark Co., Ohio.*

Eating Strawberries. We hardly need instructions on this point, and yet it may be well to observe that an English mode of serving this fruit at the table is to take it freshly picked, with all its sheen of shining dewy, perfect ripeness, and taking it by the stem, severing it with the thumb nail, thus presenting it in its full beauty. The eater then takes the berry by the stem, dips its moist and glowing crown in powdered sugar, and thus obtains and enjoys to the full all the aroma of its then abundant juice.

The Norway Spruce. If Mr. Charles A. Dana, of New York, will honor us with a brief visit we think we can show him such specimens of the Norway Spruce as will force him to see the weakness of this fling at a valuable tree, and which recently appeared in Garden and Forest: "Finally, I have one piece of advice for the young planter, whether his purpose be æsthetic beauty or material profit, and that is, never to plant a Norway Spruce. One of the great misfortunes that have happened to the gardens and pleasure grounds of our Northern States is the introduction of this ugly and useless tree."

Applying Hellebore, etc. For years I have applied Hellebore to Rose and Currant bushes, and Paris Green to Potato vines, etc., with great satisfaction by the use of a very simple home-made sifter. This consists merely of a common kitchen-salt bag to serve as the sifter, and attached to a wire or reed that is bent in a circle and fastened to a short handle. Such salt bags usually have meshes about right for this purpose, and by placing the dust poisons in one of these and shaking it on the plant, the operation may be easily, safely and well performed.—*D. N. L.*

Roses in Iowa. The old fashioned Cinnamon and Scotch Roses are the only Roses that will withstand our winters without covering. Even the so-called "Hardy as an Oak" Rose, Madam Plantier, will kill to the ground if left unprotected. All those Roses that approach perpetual flowering, like Alfred Colomb, Coquette des Alps, Capt. Christy, Jacqueminot, Mad Chas. Wood, Paul Neyron, and many others, must have extra protection here in Northern Iowa. It has been an expensive experience for me to reach this information, for I depended upon the catalogues, which said these varieties were hardy.—*Mrs. T. H. L., Mitchell Co., Iowa.*

Spiders and Plant Insects. Repulsive as Spiders are to most persons, they perform, according to Dr. Keller of Zurich, an important part in the preservation of forests, by defending the trees against the depredations of aphides and insects. He has examined a great many Spiders, both in their viscera and by feeding them in captivity, and has found them to be voracious destroyers of these pests; and he believes that the Spiders in a particular forest do more effective work of this kind than all the insect-eating birds that inhabit it. He has verified his views by observations on coniferous trees, a few broad-leaved trees and Apple trees.

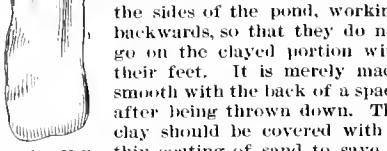
A Word on Blanching Celery. The main object of banking Celery is to keep the stalks upright and exclude the light; anything else that will do this may answer as well or better than soil. If some extra clean and bright Celery is wanted to exhibit at your fair next fall, secure a supply of tea chest matting at the grocer's now and at the usual time of handling wrap each plant in a double thickness of this material, keeping it in place by drawing a little soil around the bottom and tying above once or twice with bass or other string. Add more matting when necessary, keeping the plants covered to the top. The result should be satisfactory at the end of three weeks, more or less, according to variety.—*F.H.M.*

Roses in the Autumn. The most certain way of securing these is to plant out Tea and others of the ever-blooming kinds in spring. By procuring strong plants in three-inch pots, and at a cost of from $1.50 per dozen and upwards, setting these in well enriched ground, kept well cultivated and well watered in dry weather, there should be loads of fine flowers from August until near November. Two common mistakes made with these plants is in setting out such as are too small, and in trying to make the same plants do full duty both as winter pot plants and as summer bedders. In a well drained soil many of this class of Roses can safely be wintered in the beds where they have grown by bending them to the ground and covering with sods or earth at the approach of winter.

Some Simple Tools and their Use. For setting Strawberry plants use a common plasterer's trowel. Striking into the mellow soil, pressing towards you, and insert the plant with the left hand, spreading the roots with the thumb and fingers; withdraw trowel and with it push soil against the roots, pressing firmly. For trimming Raspberry bushes use a pair of shears made by a blacksmith,—blades 1 inch wide and 10 inches long, bolted to light, strong 2-foot handles. For cutting out old wood use a bill hook, with blade 1½ inches wide and bolted to a scythe snath. For the first workings of garden stuff with a horse, nothing equals an expanding cultivator, with frame thickly set with V or diamond shaped harrow teeth. For fining soil after the harrow, a good clod crusher will do the work.—*A. M. Nichols, Licking Co., Ohio.*

Thinning Fruit. Let it be put down that a medium-sized crop of perfect fruit is invariably worth more than an abundance of inferior specimens. The former is always in demand even when the latter as a drug finds no sale. To secure the better quality, thinning should be resorted to. Mr. Hoopes remarks in the Philadelphia Press that in the case of small trees, Grape-vines and small fruits, the secondary specimens may be pinched or clipped off without trouble; with large old trees the difficulty is to reach the topmost branches. Although a crude practice, poling off a portion of the crop is better than allowing all to remain on. Nipping off a part of the fruit with pole-shears is rather tedious, but with the finer varieties it pays. The owner of a fine vine who does not pinch off one-half the clusters of a prospective heavy crop does not deserve good Grapes.

Clayed Ponds. An artificial pond for the growth of aquatics or other purposes may be readily constructed by the claying process, wherever a tenacious clay is procurable. This is done by first excavating to the desired form and ramming the foundation somewhat firmly. Upon this surface a layer of from three inches to six inches, if the pond is large, of worked clay should be placed. Men who do this work take up lumps of clay in their hands when it has been


Bag for Hellebore and other Poisons.

well worked, and dash it against the sides of the pond, working backwards, so that they do not go on the clayed portion with their feet. It is merely made smooth with the back of a spade after being thrown down. The clay should be covered with a thin coating of sand to save it from freezing above the water-line, or from cracking in summer. Dipping places should be protected with wood.

Rock Work. Sometimes a touch of wild nature introduced into a lawn or flower garden has a charming effect. In a shaded corner a piece of rock-work appears to good advantage, and is easily made by forming a mound of good soil, and inserting rocks around and on top, leaving pockets for rich soil, in which to plant ferns and some delicate vines, such as Maurandias, Thunbergias, etc., but no luxuriant or compact grower,

as these would soon completely cover and mar the effect of the rugged rock work. The Virginia Creeper, Bitter-sweet, Virginia Silk vines, or such other vines as clamber over bush or rock work as they will, while some small flowering plant, as Dew Plant, Oxalis, Sweet Alyssum or Othonna, is very lovely. Any of the white foliage plants mixed with Portulaca is a good contrast;

Plant of Caladium Esculentum.

indeed, it matters little what you plant if there are plenty of vines and bright colors.—*L. H. T.*

Garden Cemeteries. The idea of rendering our burying grounds places of pleasant aspect instead of being, as they too often are, places of neglect and gloom, is well worthy of consideration everywhere. An improved state in these cannot be better brought about than by careful and judicious planting of trees and shrubs. There are many of these suitable for such a purpose, including such interest-giving plants as the various smaller growing forms of trees, like the Mountain Ash, Weeping Birch, Kilmarnock, and other Willows of similar growth, cut-leaved Alder, Cork-barked Maple, Panicle-flowered Hydrangea, Japan Quince, Persian Lilacs, Weigelias, and dozens of other equally deserving kinds. Pleasant associations would not detract one whit for our veneration of the dead; indeed, in the too common state of these we have too much expression of living grief rather than of love for the departed.

Growing Large Caladiums. A course of stinted feeding and watering must be avoided if one desires the greatest satisfaction in growing the Caladium esculentum. This point observed and it is amazing what results in size of leaf and plant can be secured shortly after planting the tubers. But to neglect high feeding and watering is to lead to a smallness of growth, precisely such as one sees in perhaps three times out of four, where the culture of this noble plant is attempted. The course we have pursued with the best results has been to give to each plant a bushel of mold, consisting of one half of rich rotten manure, and then watering the plants almost daily throughout the season. Then we have been rewarded by specimens three feet high, and showing about the proportion of our engraving. To keep in mind that this plant naturally grows in the rich alluvial soil at the edges of streams is to get the right idea as to its needs.

The Niagara Experimental Grounds. Each reader of this journal is invited to feel that he has a direct interest in the work to be carried on here in testing kinds and varieties of fruit, garden and ornamental growths, and of methods of culture and profitable management. And inasmuch as the grounds are located but ten minutes travel by rail from Niagara Falls, and eight minutes walk from La Salle station, and as a large proportion of our readers expect at some time to visit the great cataract, all such are most cordially urged to take one of the numerous trains daily from the former place and visit the grounds to see the work in progress. Or a carriage drive from the falls along the river banks would be found pleasant and instructive. The trip should be well worth making, also on account of visitors here finding themselves in the midst of thousands of acres of successful fruit orchards and gardens, which have contributed their share towards making this section famous for its products. But let not too much be expected of the new place in its first year, it was purchased too late in the spring for the work to even fairly commence this season.

Propagating Cactus. Failure is frequently met in this operation by keeping the cuttings too wet. Mr. Blanc in his "Hints on Cacti" illustrates a method of setting the slips, which we have practised for years with success, and can recommend to our readers for all kinds of this interesting family that may have elongated leaves or branches. This is done by taking a cutting and tying it to a small plant stake, about 3 inches above the lower end of the stake, taking good care to have the cutting growing-side up. Insert this in a 3-inch pot filled with clean sand, placing a little moss or peat over the hole in the pot to keep the sand from running out. Let the cutting just fairly touch the sand, and not be buried in it. Roots will form in about two weeks, and afterwards a new shoot will appear. You may then shake the sand out and replace it with good, rich soil, one-fourth sand and one-fourth manure. In about 8 days set your plant in the full sun, water it well, and let it grow until cold weather. Gradually withhold water, and during winter let it remain in a very sunny place indoors, where it will not freeze. If this place is very dry, water your plant about once a week. Toward the end of March, when growth begins, water may be given more freely, and the plant may be shifted to a larger pot, where it can remain for several years.

Girls in the Garden. If there is any one thing more beautiful than another in a garden of flowers, remarks a recent writer, that thing is a beautiful girl, with a sunbonnet on her head so wide and capacious that you have to get right square before her, and pretty near her, to see the glowing cheeks that are sure to be there if she is at all accustomed to garden walks and work. Physically, there can be nothing better for daughters, and, indeed, for many wives, than to take sole charge of a small flower garden. The benefits derived from early rising, stirring the soil, sniffing the pure morning air, are freshness and glow of cheek and brightness of eye, cheerfulness of temper, vigor of mind and purity of heart. Consequently, she must be more cheerful and lovely as a daughter, more dignified and womanly as a sister and more attractive and confiding as a wife. If you have not the dooryard ground, then get a dozen pots and plant the seeds of flowers to your taste. The care and attention required to rear and train the growing plants occupies the mind, to the exclusion, oftentimes, of senseless novel reading, a useless waste of time. You listless, pale-faced, fragile thing of a girl, throw off your mock delicacy, put on gloves, if you will, but work in the garden till your cheeks will vie in color with the blush of the Rose you cultivate.

The Rhododendron. It has often been a matter of surprise to me, remarks our correspondent Mrs. M. D. Wellcome, of Yarmouth, Maine, in the Independent, that these exquisitely beautiful and hardy shrubs are not more frequently cultivated in the gardens of amateurs. It may be, in many cases, for lack of knowledge respecting them. Ten years ago I received from New York two varieties of the *Catawbiense* species, with buds set. They bloomed well, and have every June since. Never were they so beautiful as last year, in the largeness of their trusses and individual flowers. The bright evergreen foliage, with stems of bright yellow, is very attractive before the coming of the flowers. They thrive in any good garden soil. In my own garden they have a strong element of clay in which woods-earth and sand have been intermixed. Peat is injurious. They are growing in a pretty sunny position, and a large Hydrangea grandiflora protects them on the north. Evergreen boughs are placed over the roots late in the autumn. There are several species of Rhododendron, but the Hybrids produced from the *Catawbiense* are the only perfectly hardy. This species is a native of North Carolina. *R. ponticum* is a native of the Himalaya Mountains in Asia, and from this many beautiful varieties have been produced, but they are too tender for our winters in the open ground. There are colors of purple, lilac, pink, crimson, white, and scarlet, of beautiful shadings and markings. The seed-pods ought always to be removed soon after blooming, as the ripening of seed draws very largely upon the vitality of the plant. I have never seen an insect pest on them, and if I could have only one hardy blooming shrub, it should be a Rhododendron.

Floral Fancies Noted by a New Yorker.

Just now the city florists are chiefly occupied in making souvenirs for departing tourists; apart from this, trade is duller than it has been for years. However, every steamer day brings them something to do in this line. The usual gift is a basket; frequently it is filled with fruit and flowers combined. One beautiful basket given to a lady departing on a French steamer was of flat wicker, diamond shape, about four feet long. Around the edge was a fringe of white Lilac; at each end were clusters of lavender Orchids, and the center was filled with American Beauty Roses relieved by Lily of the Valley. The whole was veiled in Maiden Hair Fern. It was an exceedingly beautiful thing. A floral horse-shoe presented to Austin Corbin on his departure for Europe was made of Jacqueminot Roses and Lily of the Valley, with caulks of Violets. It is very rarely, however, that such designs are called for by the patrons of up-town florists; a basket is the usual gift.

Pouch baskets of rushes resting on easels are much in favor. A handsome one had towards the back a few dark-colored Cypripediums relieved by Maiden Hair; in the front were Roses, shading from deep pink to pale yellow. A trailing bunch of Roses on the front of the pouch was fastened so as to appear a continuation of the mass in the basket.

Globular rush baskets resting on a tripod are most admired when containing a single handsome plant; when filled with flowers they are apt to look clumsy, unless very carefully done.

In spite of the fancy for Violets, one sees almost more Lily of the Valley now in the form of corsage bouquets. It is very plentiful, and apart from its spring-like look it harmonizes with the delicate greens so fashionable in millinery, which is quite a consideration to the feminine mind. The immense bunches which used to make a fashionable girl look like a perambulating garden are out of date now, but a breast knot of moderate size is an indispensable finish to the toilet, and certainly more women wear flowers now than in former seasons. They have ceased to be a luxury for the matinee or evening function, and are a necessity for every day wear.

Very few decorations of any note have taken place lately; there have been few entertainments. At one reception the rooms were prettily adorned with Hydrangeas in pots, placed singly and in masses; the effect was particularly good, white flowers only being used. At the many April church weddings Palms were the chief adornment; comparatively few flowers were used.

At several larger luncheons lately the guests have been seated at small round tables, each accommodating four to six, and each of these tables is decorated with a single variety of flower. One will be Lilacs, another Roses, another Violets, and so on. Where large Roses were used on such an occasion, each lady would receive a single flower with her name written on a leaf in gold, but this is a comparatively hackneyed idea.

All table decorations show apparently unstudied taste, rather than the heavy elaboration of former years. The loosely filled basket, from which the flowers are taken to form the favors, is a vast improvement on the old formal arrangement, with bouquets lying at each plate. In spite of all we hear about the excess of ribbon in floral arrangements the best florists use but little; the fashion has become vulgarized, and people of taste desire fine flowers rather than millinery "fixings."

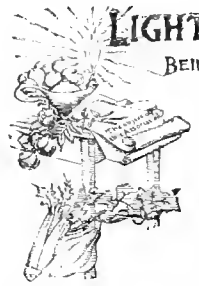
Propagating the Cactus.

Lilac enters into the favorite bouquets; brides carry white Lilac and Bride or Niphetos Roses; their maids of honor pale-tinted Lilac with pink Roses. La France, Mermet and Cusin seem always to take first rank. That new sulphur colored Carnation, Andelusia, seems likely to be a favorite; it is a very desirable color. Those terrific dyed Carnations which pained our eyes earlier in the season have disappeared totally.

The Pansy is enjoying a little boom, through Mrs. Cleveland's fancy for it. However, it is always a favorite flower; a suburban florist declares that it sells better than any other flower that grows. Not that one can acquire a fortune by growing it for the city trade.

Some of the choicer wild flowers are to be seen in the city stores, as well as on the street. Little posies of Trailing Arbutus are admired by many, and always sell to some extent. A little later we shall see Rhododendrons and Kalmia. The cultivated Rhododendrons have been used more this year than usual, both as cut flowers and decorating plants. Orchids are still in high favor, and find place in all the choicest designs.

EMILY LOUISE TAPLIN.



Potash for Peaches. Henry W. Comfort, of the Pennsylvania Horticulture Society, recommends the application of potash to Peach trees to secure the best results. He uses muriate of potash and acidulated South Carolina rock.

Maine Apples. It is but a few years since our markets extended only to the larger and distant cities. Now Maine Apples are quoted in foreign markets, and higher than those of any other State. —*President Pope of the Maine Pomological Society.*

Improved Grape bags. Bags made of specially prepared paper — water-proof and practically indestructible—were shown by President A. W. Pearson to the members of the N. J. State Horticultural Society at the last meeting in Trenton. They are manufactured by a firm in Philadelphia.

Climbing Roses A pretty effect is produced by planting a Queen and Belle together and allowing them to twine together over the same support. Flowering at the same time, the white flowers of the one mingled with the bright red of the other makes a very attractive combination.—*Robert Milliken.*

American Association of Nurserymen. The thirteenth annual meeting will be held in Fraternity Hall, Detroit, Mich., commencing Wednesday, June 20, 1888, at 10:30 A. M., and continuing three days. The objects of the Association are well known. It is sufficient to say that this will be one of the most important and satisfactory meetings ever held. An interesting and varied program is being prepared. The usual question box will be provided. Reports from the several committees on stock will be called for. The Exhibition of new varieties of fruits, trees, implements, devices, etc., is invited, on which special reports will be made. The names of all who become members previous to June 4 will be inserted in the badge book. For further particulars, address D. Wilmot Scott, Galena, Illinois.

Culture in Drought. J. S. Browne.—If the surface soil is loose and there are no weeds do not cultivate during drought. It is a mistake to suppose that the ground absorbs moisture from the air during the night in summer, for the temperature of the soil is always higher than the air immediately above it at night. The object in keeping the ground loose and mellow is not to allow the air to permeate it and thus deposit moisture, but by the diffusion of the particles of earth capillary attraction is retarded and the moisture in the soil is retained for the use of the plants growing in it. E. A. Riehl. Strawberries ought not to be cultivated in dry weather. Vandenburg. I would cultivate always, it makes them grow better. Browne. I don't approve of this, it is a waste of moisture. —*Discussion by Alton, Illinois, Growers.*

Transplanting Flowers. When transplanting plants, whether grown from seeds or cuttings, to the open ground care should be taken to press the earth firmly down upon the roots and to give a thorough watering afterwards. A partial shading during the heat of the day is necessary until the plants seem at home in their new location and begin to push their roots into the surrounding soil, and a mulching of some light material, such as spent hops from the brewery, old leaves or even sand, is of great benefit, as it prevents the soil from drying and shrinking away from the young plants before they have time to settle themselves and go to growing. If after the successful planting is accomplished, the ordinary amount of care, in watering, weeding and hoeing, is given, there can scarcely be a failure in the production of an abundance of bloom.—*Mrs. Edwards before the Chautauqua Co., N. Y., Society.*

Strawberry Culture. I used to plant in rows four feet apart and eighteen to two feet in the row, but have gradually made the rows narrower and lessened the distance between the plants until now I make the rows two feet nine inches apart and the plants one foot in the row. I do not commence cultivating until the weeds begin to show themselves for I want the plants to get a good start before they are disturbed; keep all runners cut off until the last of July, for the newly-set plant is no more able to make more plants before this time than it is to bear fruit. By doing this very few weeds will have to be pulled by hand, for by the time you are ready to let the plant make runners you will have the weeds all killed. If the surface soil is loose and there are no weeds do not cultivate during drought. I plant as early in the spring as possible; by preparing the ground in the fall a gain of two weeks can be made. I prefer to plant before any growth is made. If the matted system is followed, do not let the plants crowd each other, for this not only reduces the quantity of the fruit, but the quality.—*J. S. Browne before the Alton, Illinois Society.*

Plants from Seed. Amongst annuals, I find Petunias, Portulacas, Zinnias, and various Amaranths, Marigolds, Nasturtiums, Phlox Drummondi, to be most successful under what might be rather adverse circumstances. With good soil and thorough culture they may give a good return and render the garden bright and cheerful, in the driest of seasons. A bed of Phlox Drummondi is a sight to dazzle the eyes with its brilliancy and it is seldom too wet or to dry for Petunias. The blotched and striped are brilliant and varied in the extreme. The grandiflora section is particularly striking in the form and marking of its magnificent flowers. With protection from destructive winds, especially if facilities are available for watering in dry weather, success may be had with Asters, Balsams, Candytuft, Pansies, and a few others. These are well worthy of a little extra care. Of florist or bedding plants, Ageratum, Sweet Alyssum, Daisies, Feverfew, Lobelias, and Verbenas, can be grown from seed and treated as annuals, and will flower the first year. But Geraniums, Coleus, Chrysanthemums, Carnations, Heliotrope, and many others, can not be grown from seed profitably, and should be procured from the nearest florist. They are mostly of easy culture. There is a large list of perennials which I think deserving of more attention than they have been receiving of late. Columbines, Snapdragons, Larkspurs, Pinks in great variety, Paeonies, Phloxes, etc. These require but little care, and increase in strength and beauty from year to year, only needing to be taken up and divided once in three or four years. —*R. Milliken before the Kansas State Society.*

Forestry Gleams. From the report of the Michigan State Forestry Convention we gather the following: Martin Conrad, of Chicago, a wagon manufacturer, said: "Five kinds of timber are foremost in the construction of wagons, viz: White Oak, which requires 80 years to mature; Shellbark Hickory, 30 to 50 years; White Ash, 30 years; Tulip tree, or Whitewood, 60 years; and Red or Norway Pine, 60 years. An acre of timber artificially grown is worth five times as much as an acre of the natural wood. Prof. T. J. Burrill, of the Illinois University, expressed the belief that forest-tree planting is not profitable as a farm crop on land suited to the growth of wheat or corn. President Willits, of the Michigan Agricultural College, took the stand that planting trees over the arid plains of the west to bring rain is going to make a great change there. B. E. Fernow stated that seven times as much wood is used as fuel in this country as for all other purposes. The consumption of wood is on the increase, notwithstanding the use of coal. Mr. Davenport, of Barry county, a large producer of maple sugar, in an interesting paper on the Sugar Maple advised its more general planting, for both the sugar and wood. Chas. W. Garfield, a member of the State Forestry Commission, read a paper advocating one or more forestry reserves in the State. One tract of six townships in Roscommon county, containing two lakes, could easily be set apart as a natural park where the native animals and birds could remain. B. E. Fernow, United States Commissioner of Forestry, read a paper on "The Proper Basis for Forestry Legislation." He advised the appointment of a State Forestry Commissioner. Last year there was $10,000,000 to $20,000,000 worth of forests destroyed in the State. The interest on that sum applied to protection from fires would prevent nearly or quite the entire loss. Instead of laws to encourage the planting of trees, he advised the free distribution of tree seeds and seedlings, together with information as to how to plant and how to care for them after they are started.

Pears for Profit. In answer to the question of what varieties to plant for marketing profitably over a long season Mr. C. E. Randall said before the Chautauqua Co., N. Y. Society: It makes considerable difference how far distant the market is, for some good profitable pears for a near market are worthless for one more distant, spoiling before reaching the market. The Bartlett our most popular pear can be shipped to a distance only by picking before fully matured. It is excellent for all purposes except canning, for which it is too soft and sweet. The Bartlett is an early pear, and as the next standard is considerable later, the interim must be filled with dwarfs. Next in order of ripening is the Flemish Beauty a good pear, but succeeding best on clay. On gravel it becomes covered with a black fungoid growth which injures the fruit. Many recommend Clapp's Favorite; I do not. The fruit has a fine appearance, but is a poor keeper, rotting at the core, and a poor shipper. After Flemish Beauty, Sheldon, then Buerre d' Anjou, a fine late pear, even better than the Bartlett. Buerre Deil is a fine pear, about Thanksgiving. It is a little coarse grained, but well worth cultivating. Kieffer Hybrid is not a family pear, but seems to sell well on its fine appearance. It is a good canning pear, but I do not want to eat it before it is canned. I have tried Le Conte, but do not like it. The Seekel is a fine pear, save as regards size. It always brings fair prices and is the finest flavored pear we have. It needs good culture. Plant it on strong soil. The earliest pear I have is Doyenne d' Ete, ripening early in August. This pear has afforded me twice as much profit as any other in my orchard; yet early pears could be easily overstocked. It is a medium to small sized pear. My best four standards are Bartlett, Flemish Beauty, Seckel and Sheldon. But that leaves out the winter pears. My best winter pear is Winter Nelis. Some sorts will not do well unless grafted on the Quince, hence I advise the planting of dwarfs. My favorite dwarfs are Louise Bonne de Jersey, Buerre de Anjou, Duchess and Buffum.

The Garden Culture of Roses.

(*Continued from page* 177.)

Varieties of Hybrid Perpetuals. An exhibition of Roses is not always the best place to select varieties for general culture, as the exhibitor is forced to take whatever is at hand on the required day; it might perhaps be a single bloom of Horace Vernet, and the only one of the season, or perhaps Gloire de Bourg-la-Reine or Mme. Margaret Dombrain. Another instance is Mme. Lacharme, of which the essayist could not remember having ever seen more than one show specimen in our exhibition hall.

Mr. Spooner oext described about a hundred varieties of what he deemed the most desirable Roses for cultivation, giving the name of the originator and date of origin of each, but we regret that want of space prevents us from giving the full description. They were arrauged under their typical forms, adopting the standard of the National Rose Society of England, as follows:

Class 1. *Cupped*, as Baroness Rothschild.
Class 2. *Imbricated*, as A. K. Williams.
Class 3. *Globular*, as Pierre Notting.
Class 4. *Globular*, high center, as Alfred Colomb.
Class 5. *Flat*, as Mlle. Annie Wood, Boieldieu and Souvenir de Malmaison.

The number prefixed to the names in the following lists designate to which of the above-named classes they belong. The first list comprises those considered by Mr. Spooner the best twelve:

4. Alfred Colomb.	3. Mme. Gabriel Luizet.
2. Chs. Lefebvre.	3. Mme. Victor Verdier.
3. John Hopper.	1. Merveille de Lyon.
3. Hippolyte Jamain.	1. Prince Camille de Rohan.
3. Marie Baumann.	1. Ulrich Brunner.
Mlle. Annie Wood.	4. Victor Verdier.

For the best twenty-five Roses the foregoing list, with the addition of—

1. Anna de Diesbach.	3. La France.
1. Baroness Rothschild.	1. Mable Morrison.
2. Dr. Audry.	4. Marquise de Castellane.
3. Duchesse de Vallombrosa.	3. Mlle. Engenie Verdier.
	5. Mons. Bonceune.
3. Dupuy Jamain.	3. Paul Neron.
2. Jules Margottin.	4. Prince Arthur.

For the best thirty-six Roses the forgoing and—

3. Catherine Soupert.	3. Francois Michelon.
1. Camille Bernardin.	3. Louis Van Houtte.
1. Countess of Rosebery.	3. Maurice Bernardin.
4. Duke of Edinburgh.	3. Pierre Notting.
1. Etienne Levet.	Thomas Mills.
1. Fisher Holmes.	

The remainder of the hundred consisted of the following selection:

In the First Class—

Alphonse Soupert,	Duke of Wellington,
Bessie Johnson,	Firebrand,
Boule de Neige,	Marechal Vaillaut,
Captain Christy,	Marie Verdier,
Countess of Oxford,	Pride of Waltham.
Celine Forestier,	Perfection de Lyon,

Charles Darwin,	Souvenir de Charles Montault.
Dr. Sewell,	
In the Second Class—	
Abel Carriere,	La Duchesse de Morny,
Abel Grand,	La Havre,
Alfred W. Williams,	Louis Dore,
Barthelmy Joubert,	Marchioness of Exeter,
Beauty of Waltham,	Miss Hassard,
Eclair,	Mlle. Mary Rady,
Edouard Morren,	Mme. Charles Wood,
Horace Vernet,	Mme. Therese Levet,
Jean Liabaud,	Mrs. George Dickson,
Jean Soupert,	
In the Third Class—	
Anna Alexieff,	Magna Charta,
Antoine Mouson,	Marie Louise Pernet,
Auguste Rigotard,	Mary Bennett,
Baron Nath'l Rothschild,	Mlle Margaret Dombrain,
Count de Mortemart,	Mme. Clemence Joigneaux,
Coquette des Blanches,	Mme. Eugene Verdier,
Duchesse de Calyus,	Mme. Isaac Pereire,
Duke of Connaught,	Mons. E. Y. Teas,
Elizabeth Vigneron,	Mrs. Harry Turner,
General Jacqueminot,	Prince de Portia,
Gloire de Bourg la Reine,	Senateur Vaise,
Gloire Lyonaise,	William Warden,
Harrison Weir,	Xavier Olibo,
Heinrich Schultheis,	
In the Fourth Class—	
Duke of Teck,	Monsieur Noman,
Lady Sheffield,	Princess Beatrice.
In the Fifth Class—	
Annie Laxton,	Gloire de Dijon,
Boleldten,	Marguerite de St. Amand,
Eugene Appert,	Queen of Bedders,
General Washington.	

(To be Continued.)

P. M. Augur on Strawberry Growing, Something About Plums.

[*From papers and discussion before the Maine Pomological Society.*]

Mr. Augur believes in thorough cultivation for the Strawberry. He would sub-soil to the depth of twenty inches, and apply twenty-five cords of stable manure to the acre. To get the ground in proper condition, it should be planted two years to hoed crops previous to setting the plants. The previous cultivation will also clear the ground from the worst pest of this plant, the white grub.

He could not say too much for drainage. It not only caused better crops but the fruit was about four days earlier. Mulching for protection in winter did not seem to be necessary in Maine where the snow lay on the ground all winter, but in Connecticut he applied about two tons of poor hay per acre. After taking off one crop, he plowed at once, alternating some other crop before again setting it to Strawberries. He preferred getting one great crop of fine berries to running a bed two or three years, fighting weeds constantly, and getting inferior fruit. He attached great importance to selecting good plants from vigorous stock for setting. Poor plants from old beds will tend to run a variety out.

For market, he recommended several varieties, but seemed to favor the Crescent and Jewell. The Crescent succeeds everywhere, but the Jewell requires deep, strong soil, and was adapted to hill culture. Before buying new varieties to any extent, he would advise first buying a dozen plants of a kind to test them.

The secret of Mr. Augur's success in fruit culture could be easily seen in this lecture. It is thoroughness. A man like Mr. Augur, on land that has been thoroughly underdrained, subsoiled to the depth of twenty inches, manured at the rate of twenty-five cords to the acre, and kept free from weeds, must necessarily obtain a heavy crop. His Jewells, set 18x20 inches, had averaged a quart to a plant. In reply to a question about fall planting, he said if he set plants in the fall he should remove the blossoms the next season and allow no fruit until the year after.

Mr. Dunbar had an experience of thirty years in the culture of Plums. His soil was moist clay, but with good natural drainage. But Plums succeed as well on different soils. It requires to be well fed. It will not stand neglect. He attributed most of the failures with this fruit to this cause. Hen manure and manure from the hog-pen are as good as any. The best place for the Plum is in a henyard. As it requires clean cultivation, not doing well in grass, a henyard seems to be just the place for it. Besides the hens are the best protection against the curculio, the worst pest of this fruit. He attributed his own success with Plums to thus growing them.

The black knot had troubled him considerably. While no sure remedy had been discovered, he found by applying manure liberally to a tree where he saw signs of the black knot, it gave the tree a thrifty growth, and had a tendency to check its ravages. By this means he had not lost a tree for fourteen years. The varieties which had done the best with Mr. Dunbar were the Lombard, Imperial Gage, Bradshaw, Niagara and Wheat. From what he had seen of the Niagara, he was favorably impressed with it.

Mr. Augur endorsed what Mr. Dunbar said in favor of the Niagara. It seemed hardy, prolific and free from black knot. Mr. Augur also recommended the German Prune, Pond's seedling and Quackenboss as quite free from black knot. Shropshire Damson is excellent for preserving, but like Lombard, rots in a hot, moist season.

Bavery is an excellent dessert variety, but this tree is much troubled with black knot. The Lombard requires twice as much sugar for preserving as the German Prune. The McLaughlin, which originated at Bangor, was favorably spoken of by all as a dessert fruit.

The Raspberry and its Culture.

[*Extract from prize essay by Mr. A. N. Wilcox, before the Minnesota Horticultural Society.*]

Species. Blackcap (*Rubus occidentalis*), European Red (*Rubus Idaeus*), Native Wild Red (*Rubus strigosus*).

The first of these species includes all our native Blackcaps, whether black, purple or white. They propagate themselves by rooting the tips of the branches of the current season's growth. The other species named perpetuate themselves from root cuttings or suckers. There is a small class of Hybrids between these two, which may be produced by either tip rooting or suckering. Of these the Caroline alone is worthy of cultivation. The common name of Raspberry is derived from the Italian *rasp*, probably because of the roughness of the wood. The name "Rasps" is still used in Scotland.

The best varieties of blackcaps for general cultivation in this climate are the Tyler or Sonhegan for early, and the Ohio and Mammoth Cluster for late berries. Doolittle is good when young, but loses productiveness with old age.

With a desirable location and adequate winter protection, the more tender Gregg or Hilborn, or Shaffer's Colossal, will amply reward the extra pains its cultivation requires. Of the red kind, I would place the Turner at the head of the list, followed in the order named by the Cuthbert, Marlboro, Brandywine, Thwack and Philadelphia. Of these, the Turner I would alone recommend for general use.

Culture. Raspberries will thrive on almost any well drained soil of moderate richness, but wet land is always injurious and often fatal to them. Harrow smooth and fine and plant deep. Plant in late fall or early spring, in straight rows, seven feet apart, with bushes three feet apart in the row. If planted late in the spring, tender shoots are liable to retard future growth. For the first season give clean culture, and, if desirable, other crops may be grown among them without injury.

When the time for picking arrives, gather as often as once in two days, and pack directly in the boxes in the field when picked. For black caps, use quart boxes and 16 quart cases; and for red, pint boxes and 24 pint cases, and market as soon as practicable after picking, as they are never better than when fresh from the bushes. Crates will cost with boxes 12 or 14 cents each.

Pruning. Pinch back between two and three feet high to increase the growth of lateral branches, and stop cultivation in season to harden the wood before freezing weather. In spring prune laterals to one foot in length, and if injured cut back to sound wood. As soon as convenient after the bearing season is over, cut out all the old wood and the new shoots to four or five in each hill, always bearing in mind that all Raspberries are perennial and that we must lay the foundation for the next season's crop, by securing a vigorous growth of healthy shoots at this time. Besides, careful pruning will greatly assist in the after culture and winter protection.

Winter Covering; Mulching. Take no risk of losing a crop by winter killing, where they can be so easily saved by covering. Cover the same as the Blackberry. We cover by removing several inches of earth from one side of the hill, so that the plants may be bent over at the roots, and thus cover the whole plant with earth. This must not be done until as near freezing weather as possible, and should be removed early in the spring. After lifting them in the spring, cultivate shallow but thoroughly. The best mulch to guard against drought is three or four inches of fine, loose, frequently stirred soil.

No branch of horticulture pays better for a series of years than Raspberries, as they are a comparatively sure crop, besides always bringing a fair market price, as their soft natural condition and rapid deterioration prevents our southern neighbors from filling our markets with hundreds of carloads in a season, as they often do with the firmer Strawberries and Grapes.

Celery Culture.

[*President W. W. Rawson at the meeting of the Boston Market Gardeners' Association. Discussion.*]

For general crop seed is sown in April under glass. [The course was detailed on page 176, May issue.] About June 1 the plants will be ready for transplanting. The rows in the field are set four to five or six feet apart, and the plants at ten or twelve inches apart in the row, usually among the growing crops of early Onions, Beets, etc.

The blight is a disease affecting this crop seriously, and seems to be the result both of severe drought and of heavy rain. The ends of the leaves appear spotted, then the stems turn yellow, and often the plant is worthless. Blighted Celery will always be found to have sickly roots, and the cause of the disease is thought to be a check of growth either by severe drought or very heavy rain. Did not think much could be done to save Celery when badly blighted, but when first beginning to blight he would till it and enrich the land. If dry then plow up to it and water; if wet, plow from it and manure with fine compost or good fertilizer. He would not plow in manure in summer before setting Celery as a second crop after Cabbage or Beets.

Banking for early market begins early in August, and at this warm season the Celery will bleach in ten days after banking. The portion for marketing before Thanksgiving is banked late in September, and for late keeping after the middle of October. In cool weather it takes three or four weeks to bleach it. The Arlington variety will bleach a week or two quicker than the Boston Market. These are the two kinds grown for our market almost exclusively. The Arlington variety will grow quicker, on poorer soil, and make more boxes to the acre than the Boston Market, and is considered the more profitable variety to grow.

In putting up Celery for market on a large scale, each man will dig and clean and wash from three to five boxes per day, where the Celery is good and they know how to do it. The cost of getting it ready, therefore, is about fifty cents per box, and the cost of growing, all told, not far from fifty cents a dozen.

The Celery can be easily plowed out of the row by a skillful plowman, turning a couple furrows from the row at either side, and then running the plow directly under the row. If it is to be stored in a pit for a long time the outer leaves should be trimmed off at the pit; but if only to be stored for a few weeks, this is not necessary.

Salt hay and seaweed are used to cover the pits. If it is desired to ripen the Celery quickly the seaweed is better; otherwise the salt hay is preferred. The pits are made twenty-four feet wide with three feet rise in the middle, and covered with boards under the hay. The best temperature for a pit where the Celery is kept long is about 36 degrees.

Mr. Kirby agreed with the president in regard to blight. In wet weather Celery roots are near the surface, and when dry weather follows they suffer and blight comes. He had produced blight artificially by cutting the roots with a spade. The report of the Department of Agriculture for 1886 states the blight to be caused by a fungus. When he wished to keep Celery very late in spring he placed the roots three inches apart in the pit, with loam between to prevent heating.

Mr. Derby also would not apply manure in summer when planting Celery. Mr. John Crosby, however, advised manuring in summer after a Cabbage crop, then plow and roll down well and set the plants with a stick. Celery will sometimes outgrow blight, but not always.

Mr. Henry Allen remarked that fresh manure should not be applied in summer if the Celery is to be bleached in the field. After Beets or Cabbage he would manure, plow and roll, and grow Celery for bleaching in the pit.

Mr. J. W. Russell said that in order to keep Celery late in Spring it required attention; you could not leave your pit to take care of itself. He did not earth it up in the pit.

The Roots of Plants under Cultivation.

[From Paper read before the Western New York Horticultural Society, by E. S. Goff, of Geneva.]

It is through the water and nourishment absorbed by the roots that our crops are enabled to develop. Obviously a knowledge of the laws that govern root growth, and the movements of that indispensable collateral to root growth, the soil water, is of the greatest importance.

I do not propose to give here a lecture on the science of root growth, as developed by the researches of botanists. I shall only give the results so far as attained of certain experiments undertaken at our station, and I may add which are not yet completed.

Position of Roots. The stems of most of our cultivated plants incline upward. The roots on the other hand, of nearly all of them, at least in the soil of the station, incline horizontally. A certain part, it is true, grow downward.

Of all the plants that I have examined I have not found one in which the roots did not extend horizontally as far as the branches, and in very many cases they extend much further. I have not followed out the roots of the more rampant growing Squashes and Pumpkins, of which the stems sometimes extend a distance of 50 feet or more; but in the Muskmelon I have traced the roots farther than the longest stems, and in a plant of the Hubbard Squash I followed a root a distance of 10 feet, at which point it was still an eighth of an inch in diameter. It might doubtless have been traced much farther, but was accidentally broken and the remainder could not be distinguished among many other roots. I think it is entirely safe to say, that as a rule the roots of our cultivated plants (I do not here include trees) occupy more soil than is covered by the branches.

Depth of Roots. As to the depth in the soil at which the roots of our crops lie, I can make the general statement, that in the plants examined at the station the greater part lie between three and eight inches below the surface. In nearly or quite all of the plants examined a certain portion of the root reaches the depth of two feet or more, but these deep growing roots are generally few in number, and put out very few fibers. Those plants that are natives of the tropics, and that make a very rapid growth during the summer, as Corn, Sorghum, the Squash and other Cucurbitæ roots, shallower than plants that are the natives of cold climates. In these tropical plants the greater part of the roots lie from two to five inches below the surface. Among the plants that root especially deep may be mentioned the Cabbage family, Parsnip and Parsley.

In general the greater part of the root development is found just above the plow line. In many instances the roots appeared spread out upon the top of the layer of soil undisturbed by the plow, as upon a table. We know that they have power to grow deeper. If they were seeking only water, they could doubtless find this more abundantly deeper down at least in dry weather. If, however, they are seeking warmth, oxygen and plant food, with moderate moisture, they would find these near the surface, and in the soil made mellow by tillage.

Experiments in Culture. In stirring the soil about our growing crops in the manner usually practiced, we accomplish two quite different objects, viz.: We loosen the soil, breaking thereby the capillary connection between the surface, and subsoil, we introduce fresh stores of oxygen into the soil, and thus promote nitrification and root growth. But in addition to these good effects, we lacerate the root system of the plants to a greater or less extent. Is this, in itself beneficial or otherwise?

While I cannot give a sweeping answer to the question, I will relate the results of some experiments that are at least suggestive.

On the 30th of May last the roots of several Corn plants, the tips of the tallest leaves of which when raised erect were about ten inches from the ground, were laid bare, and these showed that the aggregate length of the main roots and fibers belonging to each plant (eighteen days from planting) amounted to nearly or quite one hundred feet. In order to study the effect of ordinary cultivation upon the roots, a spade was inserted to the depth of three inches on four sides of a hill of Corn, keeping it about the same distance from the stems, after which the roots were laid bare for examination. It appeared that twelve of the main roots of this hill had been severed, which was quite one-half of the entire number. In a hill examined a week after a root pruning, like that just described, the root growth, as compared to that of a hill not root pruned, was found to have made comparatively little development. The foliage, however, did not show the effect of the root pruning as plainly as did the roots.

In order to try the effect of such root interference upon the crop, as independent of the collateral effects of stirring the soil, a plat containing one-twentieth of an acre, planted with Corn, was left entirely uncultivated, so far as stirring the soil was concerned, the weeds being pulled by hand, as they became large enough to require it.

When the young plants had attained the height of three to six inches, a lawn edger was carefully inserted to the depth of three inches, on four sides of every hill in each alternate row only.

The lawn edger was kept at a distance of three or four inches from the plants, the aim being to cut the roots to about the same extent as by ordinary cultivation. The soil was not dry. On June 24th, about the time for the usual second cultivation, a second treatment was given, on the same rows, and in the same manner as the first.

The Crop. The plat was not again disturbed, except to pull such weeds as appeared, until all growth in the Corn had ceased, when the crop was harvested. Counting 80 pounds of the freshly husked Corn as a shelled bushel, the root pruned portion yielded at the rate of 32 bushels and 23 pounds of merchantable Corn per acre, and the portion not root pruned at the rate of 52 bushels and 70 pounds, or an excess over the root pruned part of 20 bushels and 47 pounds per acre, the difference between a poor and a good crop. I certainly do not propose to argue from these results that cultivation is injurious to Corn. What the experiment does teach is this: cutting the roots of young Corn plants, in a season like the past, and on soil like the plat upon which the experiment was made, is by itself, that is, independent of the other effects of cultivation, injurious. With us the season, until midsummer, was exceptionally dry, but the drought did not prevent a good crop of Corn where the roots were not disturbed.

How to Cultivate. It is too early yet to lay down rules. I simply suggest that as we do not know in advance whether a season is to be wet or dry, it would be wisest to practice that kind of cultivation which stirs the soil most thoroughly with the least damage to the roots. In a word, this means to cultivate deeply in the center of the spaces between the rows, while the plants are so young, but very shallow near the plants; and the space that may be cultivated deeply will be narrower at the second cultivation than at the first. In washing out the roots of Corn plants it was observed that at the time the tallest leaf raised erect reached the height of ten inches, the longest roots had grown horizontally a distance of about nine inches; in other words, in rows three and a half feet apart, a space about two feet wide at the center was still free from roots. One week later the horizontal roots had grown to the distance of eighteen inches, which left but about six inches of space free from roots, and by the end of another week the roots of plants in adjoining rows had commenced to intermingle.

Chrysanthemum Cultivation by Amateurs.

[By Edwin Beckett. Paper read at a Meeting of the St. Albans, (England,) Horticultural Society.]

I have known amateurs with limited means and scope to figure prominently at some of the largest exhibitions, and run the professional growers very close for honors, and in some cases actually beating them. But when this has happened, it has been mainly due to the untiring energy of the first-mentioned class of cultivators. Having met with a fair amount of success both as a cultivator and exhibitor of these flowers, I will now proceed to briefly describe what I believe to be the best mode of cultivation.

Propagation. From the middle of December to the first week in January I consider the best time to commence propagation. It is well for the beginner to make a selection of the best and most popular sorts before starting, which is easily done by noting down at the exhibitions the varieties staged by the most successful competitors, and I would also advise them to grow a limited number of sorts, having two or three plants each of the best rather than a host of uncertain varieties. By adopting this course much disappointment will be avoided.

I have found that the best way of striking the cuttings is to devote a light or two of a pit divided by a partition, and heated by hot-water pipes running through, to the work of propagation. The frame should be filled with finely sifted coal ashes to a sufficient depth to raise the cuttings to within a short distance of the glass. A great many growers advise putting the cuttings in a cold frame. I object because of the great risk of their suffering from damp and mildew, and at the same time remaining almost at a standstill.

The plants should be kept in a healthy condition from the time the cuttings are inserted until the flowering season. The soil used for filling the cutting pots should consist of two parts light fibrous loam and two parts leaf-mold with a liberal addition of sharp silver sand. Use three-inch pots with a little moss or rough loam placed over the drainage to keep it clean and sweet. Fill the pots moderately firm, and place a little silver sand over the surface of the soil. Insert four cuttings in each pot. The cuttings should at all times be clean cut and not rooted suckers, choosing the strongest and most sturdy shoots for the purpose. Some sorts will be found to strike much quicker than others.

Potting. The whole stock should be ready for potting by the end of January or the first week in February. The soil should be the same as advised for filling the cutting pots. Thoroughly water them, air and keep close for a few days, taking care to protect them from frost. Ventilate freely as they commence to grow and wholly remove the lights on all favorable occasions during the day. Nothing tends to strengthen and keep them in good health so much as an abundance of fresh air when they are in a young state.

By the last week in March they should be ready for shifting into six inch pots. The compost should consist of two parts of good fibrous loam, one part well decayed horse or cow manure, and one part leaf mold, with a good addition of coarse sand. A few half-inch bones should be placed over the drainage. Put a neat stake to each plant and return them to the cold frame, treating them as mentioned before. At the end of April, or some later, if the weather is unfavorable, move them outside to a sheltered position; the foot of a south wall or fence will suit them admirably. Let them stand well clear of each other on slates or boards to promote drainage.

They should receive their final potting into 8-inch pots in the first or second week of June. A few of the strongest growing kinds may go into ten-inch pots. The compost now should be three parts good loam and one part decayed manure, with a liberal addition of bone meal. Drain the pots well, placing a thin layer of fibre over the drainage, which should be formed with clean crocks and half-inch bones. Pot firmly, using the potting-stick freely. Place a longer and stronger stake to them before leaving the potting-shed. The most suitable and convenient sunning place is an open, airy position by the side of a walk, where they will receive the full benefit of the sun during the whole day. To make them safe from injury from the wind, drive in strong stakes a short distance apart, and strain wire or strong string to fasten them to. Syringe freely every fine afternoon, and as the plants advance in growth and the pots become filled with roots liquid manure must be applied alternately with clear water. Attend to thinning out the shoots, allowing three or four to each plant according to its strength and the variety.

Disbudding. This is a source of great anxiety even to the experienced cultivators, as sorts differ so much in the time required for the expansion of their flowers. Generally, for those required about the middle of November I have found from the last week in August to the second in September the best time. From three to six flowers only should be left if extra large blooms are desired. The central bud should always be left. Disbudding must be performed by a steady hand and keen eye. I use a small pointed stick, taking the buds away when large enough, and exercising great care not to damage the remaining bud.

(To be Continued.)

The Planting and Care of a Vineyard.

[From discussion of Chautauqua Co. Horticultural Society, March 31, 1888.]

Preparation of the Soil. Mr. Hynes said that the depth of plowing depends upon the

previous depth of cultivation. He should not destroy the surface roots. He always plowed his vineyard in the fall, throwing the furrows towards the vines, and sometimes plows again in the spring, usually plows four to five inches deep.

Mr. Reynolds. A four-year old vineyard plowed by me in the late fall was injured by the winter, a part not plowed being uninjured. Preferred early fall plowing, so ground may be compact before severe weather comes on. Mr. Schoenfeld said if a large root is broken off the vines will make an effort to throw out new roots to repair the injury.

Planting. Mr. Watson advised to plant early. Nurserymen who have to hold back a quantity of vines may have some reason for planting surplus stock late, but vineyardists as a rule should do their planting early, finishing the planting before June 1. Vines may and do live planted in June, and even in some cases July, but the growth will be much less than those early planted; no invariable rule can be laid down for Grape culture, but all vineyards require cultivating six to eight times during the season.

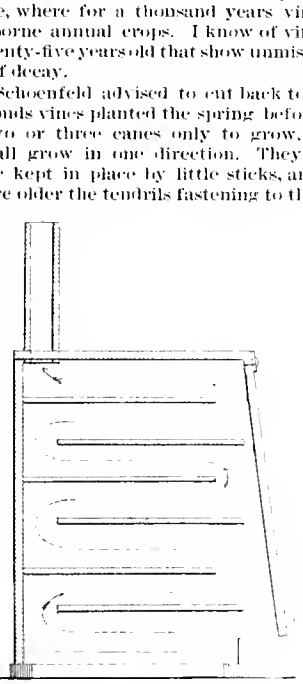
In planting, one of the safest, cheapest and best fertilizers is ground bones. A pint to a vine is none too much.

The price of Grape stakes (Chestnut, second growth) is about seven cents. Use good braces ten feet long. Wire has gone down for one quality to $2.35 per 100 lbs.

Pruning. Mr. Hall believed in pruning vines twice the first year, once after the new growth starts, and again near the close of the season.

Mr. Bartholomew said we should aim to prune so as to give all the energy to the root. Advised to prune young vines back to two buds. The first few years are the most important in the life of a vineyard. The wise vineyardist looks for protracted, rather than for immediate results. So called winter injury to vines is in most cases due not to the winter, but rather the result of immature ripening, induced by too late fall growth. Advised the pinching off in the early fall of the ends of the growing canes. This will induce lateral shoots to be thrown out, which should also be pushed back. This heading back develops heavier and riper fruit, and also a more perfect ripening of the canes. This is no new idea, but one extensively practiced, especially in Europe, where for a thousand years vineyards have borne annual crops. I know of vineyards not twenty-five years old that show unmistakable signs of decay.

Mr. Schoenfeld advised to cut back to two or three buds vines planted the spring before. Allow two or three canes only to grow, having them all grow in one direction. They can at first be kept in place by little sticks, and after they are older the tendrils fastening to the other



A Home-made Evaporator.

vine will hold each in place. Keep clean and cultivate often. This is all the care needed the second year.

In answer to the question, Which is better, to leave one bud on each of three canes, or three buds on one cane, Mr. Schoenfeld said it does not so much matter just where on the vines the canes are located, as that you have the canes. The vine, above all other plants, will adapt itself to the desires of the grower. The quality of bread is not fixed by the shape of the loaf. For the purpose of economical and rapid pruning it is better to leave three buds on one cane than one bud each on three canes.

Mr. Watson said the well nigh universal practice is to leave three buds on each vine the spring following that in which the vine was planted. Owing to the danger of the wind breaking off the new growth, on strong, healthy vineyards he preferred to put up one wire the second year and fasten the young growth to that. When the materials, stakes and wire, were on hand would advise this course but would not advise to buy these in order to tie up on wire the second year.

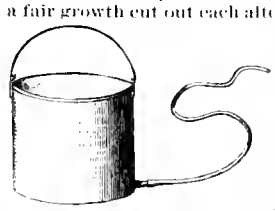
The members of the society were practically agreed that for those who are putting up vines this spring as their first bearing year to not in any case tie up but two canes three feet each.

CONDENSED CLEANINGS.

Do Canning Factories Pay? A Kansas journalist recently made a tour of several factories in that State, and reports what he saw and learned as follows: At Pleasonton he found that stockholders said there was nothing in it, but the business men told him that the company had been making some money out of it, and that it was a help to the town, both in furnishing employment for two or three months during the summer and in furnishing a market for such things as were canned. He also learned that Isaac Stadden, of Fort Scott, a wholesale groceryman, had contracted for all the goods they could can, and made a large payment in advance. They can Tomatoes, Corn, Peas, Beans and Apples. They had paid during the past season 40 cents per 100 pounds for Tomatoes, 30 cents per 100 pounds for Sweet Corn, with husks on, 40 cents per bushel for Peas, pods and all, 40 cents per bushel for String Beans, and about 25 cents per bushel for Apples. At Garnett the secretary of the canning company informed him that it had been their first year, but they would make a nice little profit. He found very nice machinery, consisting of a large boiler for making steam, large kettles, and air-tight vats for cooking and scalding goods to be canned. During the canning season 200 hands were employed, mostly women, girls and boys. They paid 18 cents a bushel for Tomatoes, $7.50 per ton for Corn, with shuck on, 40 cents a bushel for Peas and 25 cents a bushel for Apples. The citizens thought it was a big thing for their town. One farmer had planted 15 acres in Tomatoes and secured the neat sum of $990 at 18 cents a bushel, double what his land is worth. The canning company made its own cans, costing 2½ cents apiece or less. At Pleasonton $9,000 was invested in machinery and buildings, and at Garnett $10,000. The cost of machinery for a factory of ordinary size is about $3,000.

A Home-made Evaporator. I secured a box two feet long, 18 inches deep and two feet high, making the bottom answer for a top. I removed one side, cleating the pieces together near each end, and put leather hinges on, fastening it to the former bottom, but now the top of the concern. At the loose corners, I nailed on an inch-square strip to hold them firm. Inside, on each of the ends I nailed half-inch strips, two inches apart, as sides for the trays to run upon. The trays were made of strips of half-inch stuff, one inch wide, halved in at the corners and braced by diagonal wires. They are covered with white mosquito-netting. At the top and side furthest from the door hinges, I removed a piece of the top two inches wide and made a chimney two inches wide, two feet long and a foot high. When the evenings are long, we all set to work at the Apples, and putting a few pieces of wood in the stove, begin filling the trays, the lowest first. As the second tray is prepared, the first one is moved up and the new one put in next to the fire, until the evaporator is full. The evaporator is placed on four pieces of brick, stood edge-wise on the stove at the corners of the machine. The Apples dry off the first evening to some extent, the following day the evaporator lifted on again, by evening the fruit is ready to put away. My method of cutting Apples is to peel, and take off two slices from each end, then core, and slice the remainder to a thickness of one-fourth of an inch. The trays should be made one or two inches narrower than the box and arranged so that the hot air is driven from front to rear and back again as in the sketch. The door hung at the top should be kept closed except when putting in or removing trays.—Corr. Farm and Home.

Windbreaks. In no way is the absence of our forests more noticeably felt than in the piercing, biting winds of our severe winters. We cannot replace the old forests, nor would we if we could. Wind-breaks, if placed on the sides toward the prevailing winds will give material relief. Perhaps there is no tree better adapted to this purpose than the Norway Spruce. It is a vigorous grower, and what is desirable, it grows tall. When growing in clusters it presents a well-nigh impenetrable barrier to the wind. Specimens planted in our yard ten years ago are now thirty feet high. For a wind-break they should be set about four feet apart. After they have attained a fair growth cut out each alternate one. Where a grove of deciduous trees is desired to shield from the heat of summer as well as the cold of winter, I would advise planting Basswood or Linden. It has a rank growth and makes a noble shade. Its bloom is a recognized source of honey and its wood is always in demand. The Black Walnut, Willow and Cottonwood have been extensively planted in the West. A much larger area of deciduous trees is required for this purpose than with evergreens.—Rural Home.



Watering Can for Plants.

Fall Mulching Strawberries. In the fall of 1884 I mulched one-half of a field early or before hard freezing, the other one-half in the first days of January, during a thaw that had followed a very cold spell. The result was that these last named showed very few blossoms and no thrift; one ripened a few very imperfect berries scarcely worth picking, while the others were as fine as I ever saw. The dividing line between the two mulchings was on four rows of Windsor Chief, and from the two mulched in time, I got about 80 to 100 quarts per row, while the others did not have six boxes to the row. I had others, among them Capt. Jack, Manchester, Cumberland, viz., on both sides, with the same results, while Crescent Seedling came through with a fair crop, but the plants were not near so thrifty. I had a similar experience the year before but did not know the cause until after this second time; and I shall never attempt to grow berries here without winter protection. Will say that our soil here is a rich, light, sandy loam, where water never stands ten hours on level ground after the heaviest rain.—Henry Schnell, in Rural World.

The Rose Acacia for Walls. It is not commonly known what a charming effect this beautiful tree has when grown against a wall or trellise. Its branches are so brittle that it can all the more be recommended for this purpose. I once saw a Rose Acacia in full bloom in early summer against a wall, which it covered, and thought that I had never before seen a wall clothed so beautifully. The racemes have the same drooping habit as those of the Wistaria, but their color is more pleasing and less common. This Robinia flowers much earlier when planted against a warm wall than it does when grown as a standard. If a large space on a wall cannot be afforded, then the Rose Acacia may be advantageously planted against a projecting buttress, which it will adorn in a charming way, and may be kept within bounds by hard pruning. This is one of the many hardy flowering shrubs suitable for covering walls, and full advantage is certainly not taken of it. The Rose Acacia is a common shrub in tree nurseries, and is inexpensive. There are few varieties of it.—London Garden.

Water Can for House Plants. I want to tell you how we water our house plants in the bay window. I took a small tin pail and had a small tin tube soldered on close to the bottom, to extend out parallel with the bottom, then took about two feet of one-quarter inch rubber tube drawn tightly on the tin spout (total cost twenty cents), then with the pail in one hand and the end of the tube in the other, pinching the tube to stop the flow, to go from one pot to another, can reach all the plants with ease, and with less danger of breaking them, and with a little practice can hold the pail a little higher to make the pressure and spray the foliage equal to a rose on a garden plot.—Corr. Vick's Magazine.

Herbs for General Use. In planting be guided by the requirements of the household. The following herbs are those most generally used, and a moderate stock of each should be planted in the first instance, namely, Basil, Curled Chervil, Fennel, Hyssop, sweet and pot Marjoram, Mint, Sage, Winter and Summer Savory, Sorrel and Thyme. The whole of these, with the exception

of the Mint, may be raised from seed obtainable from any of the principal seedsmen, and the seed may be sown under glass or in the open. As you are anxious to obtain plants strong enough to furnish supplies as quickly as possible, the best course will be to obtain strong plants of the Sage and the Common and Lemon Thyme, roots of the mint, and to sow the seed of the Basil, Marjoram and Savory under glass, the seeds of the other kinds to be sown in the open. Other kinds can be added to the selection given when you find that they are likely to be wanted.

Fruit for the People. Each member of every family should have, on an average, one pound of fruit daily—some will eat more, some less, either fresh or cooked. How many pounds will that be in each day? There are 40,000,000 persons in the whole country old enough or well enough to eat fruit—which would be 40,000,000 pounds or 20,000 tons daily consumption. Taking the year through it would amount to 7,000,000 tons. This supply of fruit would fill 500,000 freight cars, and would require a railway train reaching once around the world. The daily consumption of fruit would prevent many persons from eating or imbibing what is much worse, and at the same time it would contribute greatly to health and prevent disease. We want more enterprise, skill, calculation and management, to raise and properly distribute these 7,000,000 tons, for we have hardly yet reached the perfection of the work.—Country Gentleman.

A Torch for Insect Nests. For burning the nests of such insects as the orchard caterpillar and fall web-worm, take a piece of soft brick known as salmon brick, and trim it to an egg shape; then take two flexible wires, cross them over the brick, wrap them around it, and twist the ends together. Then attach it by the wires to a long stick, and soak the brick in coal oil; light it with a match, and you are armed for the work. Asbestos may be used to advantage; and a little thorough work early enough in the season will obviate the necessity of more expensive remedies at a later time. Soaking in oil may be repeated as required to maintain the flame.—Bulletin (No. 10) Department of Agriculture.

Does Not Use a Filter. I have been building cisterns for several years and never had but one filter. I think they are a nuisance. Better use two cisterns alternately, cleaning out once a year. Save water in winter—snow water is best. Let the housetop be well rinsed off before allowing water to go into the cistern. I have used cistern water for ten years for my family, and have not paid $10 doctor's bills in as many years, with eight in the family. When using from coal roof, run water from barn or outbuilding in two inch tile with cement joints instead of pipes.—Prairie Farmer.

Potatoes in Trenches. The well-known Potato grower, Alfred Rose, according to the New York World, opens trenches eight inches deep; then he grades to full six inches deep. He then drops two eyes for each hill and covers two inches deep. The four inches still left open are filled up as the vines grow. Mr. Rose cuts his seed and leaves them awhile to sprout. When ready to plant all seed not sprouted is rejected. This, he says, must be done to insure a full stand, as one hill should not get the start of the other hills, or the yield will be lessened.

Alfalfa. Remember it is a poor fighter. It should be sown in the spring after settled weather without any other crop, on well prepared land. Sow in drills eight inches apart, and hoe or cultivate once or more to keep the weeds in check. It is a favorite for irrigated fields. It is not, so far as known, a favorite north of Kentucky. If sown broadcast, use not less than 15 pounds to the acre. When carefully treated, Lucerne has endured the winters on the College Grounds at Lansing, while it beats all to endure prolonged droughts.—Prof. Beal.

The Best Grapes. The Rural New Yorker has been trying to ascertain among its correspondents what the three most popular Grapes are. For the best three *white* Grapes, Niagara received 12 votes out of 16; Lady 10 votes; Empire State and Pocklington 5 each; Duchess and Martha 4 each; Hayes 3; and 12 others one or two votes each. For best three *red* Grapes Brighton stood first, Delaware second, Ulster Prolific third. For *blue or black*, Worden stood first, Concord second, Wilder third, and Moore's Early fourth.

Shade for Fruits. The most of the small fruits are less unfavorably influenced by a shady location than are vegetables. Protection from too much sun seems to be a decided advantage. This is especially the case with Gooseberries, Currants, and Blackberries. The largest and most luscious of Blackberries are generally to be found hidden under the densest foliage.—Orchard and Garden.

Charcoal is invaluable as a manurial agent; each little piece is a pantry full of the good things of this life. There is no cultivated plant which is not benefitted by having charcoal applied to the soil in which it is rooted.—Journal of Horticulture.

Bagging Grapes. It is a vast trouble but has all the advantages claimed for it—including one more, that you can then let hens run in your vineyard to keep it clear of insects. However, go slow and experiment.—E. P. P., in Independent.

Sweet Potatoes fertilized with chemicals are fairer in appearance and better in quality than are those grown with stable manure. They are also less liable to black rot and yellow rot.—Weekly Press.

The Golden Stream. The man who allows the rivulets to get his manure is always sure that the Government is robbing the people.—Kansas Industrial.

Have a Note Book. The most valuable agricultural notes are those made by the farmer one season to be put in practice the next.—Massachusetts Plowman.

Scabby Potatoes. The Rural New Yorker after four years experience advises all whose Potatoes are usually scabby to sift sulphur flour over the seed pieces.

Keeping Ahead of the Work. Work is hard to drive, but if you will put yourself ahead of it it will follow without any trouble.—Rural and Workman.

Nothing will add more to a market gardener's popularity than the fact that his vegetables are always neat and clean.—Mirror and Farmer.

The journal that causes you to think most is worth most.—Farm Life.

Vegetable Products on the Table.

The firmest jam is not always the nicest.

Carrot Pie. Scrape, slice, boil tender and rub through sieve or collender. Take one tablespoonful of Carrot, one egg, one cup of milk and sugar, salt and spices to taste. Ginger and cinnamon and nutmeg are the best spices to use.

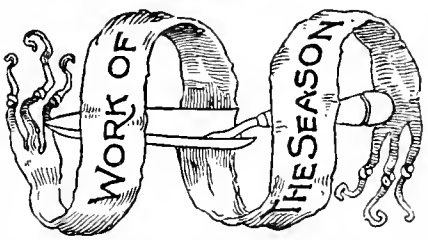
Fruit Trifle. Put Raspberries and Strawberries together with any other fruit into a dish, cover with sugar. Next put a layer of macaroons, pour over them a nice custard, which should be cold, place on the top the whites of three eggs beaten to a froth with some white sugar, and serve.

Baked Bananas. Strip a narrow piece of skin from the flat side of the Banana. Place them in a baking-pan, this side up, sprinkle thickly with granulated sugar and bake in a moderate oven until soft and tender. It usually requires about thirty minutes. Watch carefully, as they burn quickly. Serve hot, plain, or with lemon syrup.

Green Pea Griddle Cakes. One pint of green Peas, boiled and mashed, a little pepper, a salt-spoonful of salt, one table-spoonful of butter, one pint of sweet milk, half a teaspoonful of soda, one teaspoonful of cream of tartar, two eggs, beaten light, about two cupfuls of flour, or enough to make a batter of medium thickness. Mash the Peas while hot, add the pepper, salt and butter, then the milk, in which has been put the soda, previously dissolved in a little water. Put the cream of tartar into the flour, lastly the eggs, adding a little more flour, if the eggs have thinned the batter too much. When all these have been added, the batter must be well and vigorously beaten before baking. Serve hot.

Preserved Cherries. Use Morello or other sour Cherries. Wash and stem the fruit, and allow a pound of sugar for every pound of fruit. To each pound of sugar add a teaspoonful of clear cold water; put the syrup in the preserving-pan and to every three pounds of sugar add the white of an egg, slightly beaten. This egg should be added when the sugar is just melted, before the syrup gets hot. Let the syrup boil rapidly for fifteen minutes, skimming carefully. Put in the Cherries, cooking a few at a time, and fill the jars with them as fast as they are cooked. When all are done, skim the syrup and strain it over the Cherries in the jar, filling each. Let the jars stand with the covers off in a cool place till they are cold—it may be for 48 hours. Then put on the covers and make all air-tight.

Fruit Juices. Fruit juices, with just enough sugar in them to relieve their sharp tartness, seem much nicer than jelly with its fifty per cent of sugar. One of our little girls, who has frequent billious attacks, when her stomach will bear only certain kind of food, thinks so. I heat the berries- Raspberries or Currants - press and strain as I would in making jelly. Bring the juice to a boil, after adding one cup of sugar to three pints of juice. Can the same as berries. Freed of seeds, fruit juices are invaluable in correcting deranged bowels. They relieve constipation and check diarrhœa. This seems a contradiction, but personal observation justifies the statement. A pint of red, ripe Currant or Raspberry juice, tart, thick as cream, with flavor and sunshine, and fresh as when swelling the ripe berry on the stem, is just the gift to send an invalid or convalescing friend who is heartily tired of her molds of insipid, sweetish jellies.—Good Housekeeping.



HOUSE PLANTS.

Azaleas to go into the open air for the summer, keeping them in a sheltered shady position, as under lath shutters, the lath nailed an inch apart. The pots should be plunged (see below) to prevent worms getting in.

Begonias. Tuberous varieties that have sprouted can safely be moved into the summer borders, if done with care. Plant in warm, moist, half-shaded situations. Plants of the other section, for next winter's flowering, may now be propagated if not yet done. An inverted glass tumbler placed over the cuttings aids in rooting, as it provides desirable moisture.

Cacti, after blooming, all summer well plunged in a warm, sunny border, here to complete their growth.

Calceolarias, and plants of similar requirements, do better for winter flowering if sown now than if this is put off until the hotter months of July and August. The seeds germinate more freely now, and the plants will, besides, have a longer period for growth before flowering begins. It is not the easiest feat in floriculture to raise Calceolarias and the like from seed, for these are so fine as to bear neither covering or watering from overhead well. Directions for managing such seed was given on page 116.

Callas. During the summer bed them out in good soil. They will receive a check, losing most of their leaves soon after going out, but new and stocky ones will appear later. Early in September the plants should be lifted and potted, preparatory to their season of bloom.

Chrysanthemums. These, whether in pots or bedded out, should now be making good growth. The final pinching back should, with most classes, be done before this month is out. They like plenty of food and moisture, and should have sunshine at least four or five hours a day.

Cinerarias. See directions given for Calceolarias.

Hibiscus. Plants that flowered in the house last winter may be set out in the garden for the summer. Strike cuttings now for next year's bloom.

Oranges and Lemons. Treat as for Azaleas.

Plunging. It will save much labor in watering the house plants during summer to plunge the pots up to their rims in earth, sand or coal ashes. Two things must be guarded against in doing so, viz.; preventing the roots from growing out the drainage holes, and angle worms from entering the pots through these. There is one sure way for doing this, namely, to place an empty pot, some smaller than the one containing the plant, into the plunging material down so far that the latter will be at the right depth, when standing on the former smaller one. Of course with a vacancy beneath the larger pot (the interior of the smaller one), neither roots nor worms can pass through it, and the drainage will be improved.

LAWN AND FLOWER GARDEN.

Antirrhinums. If no seeds are allowed to form during the summer the plants will bloom the finer, and besides will throw up young vigorous shoots, making thrifty plants by autumn, which will safely endure the winter. We must not forget that profuse flowering is exhaustive to plants.

Annuals. Most kinds may yet be sown. Transplant and thin out the early sown ones.

Bignonia radicans, or Trumpet Vine, may be trained to a weeping shrub form, by stopping first the stem at a proper height, and then the laterals.

Bulbs that are done flowering may be lifted as soon as the leaves begin to wither, laying them in clumps in a shady place, with some soil over their lower parts, to ensure perfect ripening.

Calceolarias and like plants. See "House Plants."

Dahlias and similar plants having heavy tops should be tied up betimes, as sudden storms of wind and rain may damage them much.

Gladiolus. See directions above for Dahlias.

Hedges. Shearing these, whether they be of deciduous or evergreen kinds, just as the present season's growth begins to turn hard, has the effect of checking the growth without injury, and this is desirable.

Hollyhocks require thinning when standing close.

Lilies when in bloom can scarcely receive too much water, and the same is true of Tritomas. Make a basin around each plant and apply water liberally for a few times during the flowering time.

Mulching over the roots of Dahlias, Chrysanthemums, Carnations, Lilies, Fuchsias, Rhododendrons, etc., early this month, to remain for the summer, is a good course. Stir the surface a little before doing this.

Pansies. Seed may be sown for fall flowers.

Pegging down is a means that is not enough employed, for improving many kinds of plants. By this we refer to bringing some of the vigorous young branches down to the earth, fixing them here by wooden or metal hooks, or by crossing pegs over them. Many kinds will then take root where pegged, and altogether give a great increase of growth and bloom. We recommend this course for Verbenas, Petunias, Roses, Achyranthes, Alternantheras, Lantanas, Clematis, and in fact almost any kind of perennials, tender or hardy.

Pinks. Tie to stakes for the benefit of the bloom.

Shrubs. The best time to prune those shrubs which flower in the spring and early summer is as soon as the bloom is past. The flowers from such annually proceed from the wood of the previous year's growth—to prune them in the spring is to cut away just so many flowers prospectively. But by pruning after the bloom there is a season of growth ahead in which to provide flowering branches for another year, and the form may as well be improved by trimming at this time as if the cutting were done at any other time.

PLANT CULTURE UNDER GLASS.

Achimenes. The beauty of these may be much prolonged by the help of liquid manure at times.

Climbers that are permanent in the houses require special attention now. Let the growth be moderately free, with thinning, training and stopping as needed.

Moving Out. Azaleas, Oranges, and the most tender shrubs are benefitted by being moved outdoor for the summer into partially shaded places, as under light-foliaged trees or temporary arbors made of lath or slats. Palms, Ficus and other plants suitable for sub-tropical gardens may now be put out, plunging them in earth to the rim. See "Plunging," under "House Plants." Where there are areas about the garden that could be well adorned by pot plants, by taking pains to arrange such tastefully in lines, circles or otherwise, grading the plants according to size, the effect will be improved.

Orchids. Before the month is out many kinds will have finished their growth and will need a lighter position than during the season of growth, in which to mature. Such kinds as are still in vigorous growth must have the necessary encouragement, in the way of heat and moisture. Odontoglossums and others requiring cool treatment must not be kept too hot, never above 70° as the extreme figure.

Primroses of all kinds, but very particularly the Double White, must be provided with heavy shade overhead from now until next October.

Propagation is still in order for Fuchsias, Geraniums, Cupheas, Petunias, Heliotrope, Sweet Alyssum, etc., for winter flowering stock.

Repairing and Building Whatever in this line needs doing should be attended to early, that all may be in shape by time of occupancy next fall.

Seed sowing may be begun now for stock of Cineraria, Calceolaria, Cyclamen, Gloxinia, Browallia, Mignonette, Sweet Alyssum, Pansy, etc., with which to adorn the houses next fall, winter and spring. See "Calceolaria," under "House Plants."

Stove Plants. Summer bloomers should be removed to cooler quarters while in flower.

Summer Management. By shading the glass overhead with a wash made of naphtha mixed with white lead, to resemble thin milk, or even with lime water, keeping windows and ventilators open, dashing water about freely in walks and under the stages, the greenhouse may be an attractive and not uncomfortable place all through the summer. Pains should be taken to use specimen plants, hanging baskets, orchids and climbers to the best advantage for tasteful decoration.

Winter blooming plants in pots or that are bedded out, such as Carnations, Bouvardias, Heliotrope, Poinsettia, Stevias, Chrysanthemums, etc., should now, in their early growth, be pinched freely, to induce shapely, well-branched forms.

FRUIT GARDEN AND ORCHARD.

Blackberries. Stop the young canes at three or four feet high. Keep them tied to stakes.

Currants. Directions for keeping down the worm have previously been given. As the new growth appears it is well to remove a portion of the shoots. If there is fruit to be marketed, try the sale of some in a green state, instead of waiting for all to ripen.

Grafts of recent setting will need looking after, to see that no superfluous young shoots be drawing away nourishment that should go to the former.

Grape-vines. Newly-set ones should be allowed to grow but one shoot. Over-bearing is a great injury to young plants first coming in; two bunches to each cane should be enough. Remove all shoots of older vines that do not show at least two good bunches. Keep carefully tied to the trellis. For mildew apply flowers of sulphur by dusting.

Insects. See under this head in May.

Peach grubs should be sought out at this season. Gum exuding at the root and excrement is a sign of their presence. They may easily be dug out with the use of a knife. Heaping coal or other ashes, or earth, around the trees a foot high will lessen their attacks.

Raspberries. Treat as directed for Blackberries.

Slugs on Cherries and Pears are liable to appear this month. They are slimy, dark colored insects, and work on the upper surface of the leaves. Air slaked lime, wood ashes, or even dust, strewn over the leaves will kill them. Watch for later inroads.

Strawberries. The satisfaction from the crop will be greater for having the plants mulched before they fruit. Straw or hay answers about the best. Cut the runners as they start if the hill system is practiced, and also on newly set plants for some weeks. Keep absolutely clear of weeds.

Thinning Fruit. The average tree will yield more and better fruit if relieved of half or more of a full set crop. Thinning not only helps for the present, but for the future as well.

THE VEGETABLE GARDEN.

Asparagus cutting should cease with this month, allowing the tops to grow, to aid the proper development of the plants.

Beans. June is a good planting month; on the farms the rule is to get the field crop of bush sorts in before the 20th. Limas and all others will now start quickly, and twiners should receive their poles promptly. Some kinds may need a little help to take the pole. Do not work them when the dew is on

Celery planting may now begin, repeating it for succession two or three times, until July. In preparing for the crop bear in mind several things: Slow growth is ruin to it; moisture and an abundance of rotten dung are its great helps. The advantage of trench culture is that moisture at the roots in early growth is better secured; hence it is to be recommended for garden culture. The trench need not be more than four inches deep at the start. Work in plenty of manure, and set the plants about six inches apart; the rows may be three or four feet apart. Apply water to the trenches at times, if the season is dry.

Corn. Plant for late all through this month.

Cucumbers. Plants that were started under glass should now go out, and seeds for the main crop be planted. Prepare the hills by mixing a forkful of old rotten manure in each. They may be about four feet each way. The finer the soil the better will be the crop. As fast as the young vines grow, each should be drawn up to the stem, to prevent bugs perforating them. When the vines begin to spread, by nipping out the ends at the third joint they will branch further back, and by the means give an earlier and larger crop.

Egg Plants will now have the weather they need. Give a rich spot, setting the plants in rows two feet apart and fifteen inches in the row, and follow up with clean culture.

Insects. *Striped bugs* on Cucumbers and Squashes early begin their work; meet on the young plants by dusting with wood ashes or plaster, or else poison them with Paris green and plaster, using in the proportion of one pound of poison to 150 of plaster. The *Common Squash Bug*, known at once by its offensive odor when crushed, will appear near the end of this month, and needs looking after. By carefully examining the plants while small the bugs and their eggs may be found and destroyed, thus saving much annoyance later on, if not the crop itself. The *Potato Bug*, or *Colorado Beetle*, the great enemy of the Potato, Egg Plant, etc, must now be dealt with by dusting with Paris green or London Purple, or else sprinkling with solutions of these.

Lettuce for succession or for late crops should be sown where it is to grow; transplanting does not work well for this vegetable in hot weather.

Melons. Treat as directed for Cucumbers.

Peas. Late sown ones, to succeed at all, should go into trenches as directed for Celery, but watering will not be needed unless drought prevails.

Peppers. Treat as directed for Egg Plants.

Provide brush for Peas, poles for Beans and trellises for Tomatos, where these yet are lacking.

Sow such things as Lettuce, Turnips, Parsley, Broad Beans, Radishes, Spinach and Endive.

Squashes. The bush sorts may be treated as directed for Cucumbers, while others will need more space, say eight feet apart each way. Give plenty of manure and fine culture; these are great helps against insects. The space between the plants can be devoted to Lettuce or other early crops.

Thinning of such sowed crops as Beets, Carrots, Lettuce, Onions, Parsnips, etc., should be attended to.

Tomatos should now be well under way. In garden culture some kind of a trellis, if it be not more than a few sticks laid up, or a rack made by driving in some stakes slantingly, will give more satisfactory results. The fruit ripens better if exposed on all sides to sunshine and light.

FRUITS AND VEGETABLES UNDER GLASS.

Cucumbers in frames require an abundance of water, both over the foliage and at the roots.

Grapery. 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 to the air by day and night. Crops ripening need an abundance of heat. In the cold grapery while the vines are in flower, the temperature may be up to 85° or 90° at midday. Water should just now be largely withheld. When the blossoms are fully out, to give the bunches each a gentle shake will aid the distribution of pollen. When the berries reach the size of Peas a liberal thinning out of them will be helpful. One bunch of fruit is enough to leave to each cane, stopping this at the third leaf beyond the bunch. Tie up the shoots as the weight of fruit increases.

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 daily.

THE POULTRY YARD.

Prize Winners never came by poor care.

It is the man who does best by his fowls whose fowls do best by him.

Sprigs of Cedar distributed throughout the nests of fowls will effectually clear them of vermin. Tribune.

A Hint for June. Poor health, poor laying, poor results, are produced by failing to furnish pure water and plenty of it in warm weather.

In feeding, remember that the carbonaceous foods (corn, wheat, fat meat, oil meal, starch, etc.), though containing nitrogen and the phosphates, tend to the production of fat, while the nitrogenous foods (lean meat, fish, milk curds, cheese, high-pressed oil meal, clover, peas, and beans), produce meat (or muscle), and, being composed largely of nitrogen, assist in the production of albumen, hence are best for supplying that ingredient in eggs.—Poultry Keeper.

Squash and Pumpkin Vines. Mirror and Farmer remarks that in those yards where the chicks are kept squash and pumpkin vines may be grown with advantage. Such vines are not injured by the chickens, but, on the contrary, are partially protected from bugs and insects. The chicks will resort to them for securing shade and as a retreat from the eye of the hawk, while the crops harvested from the vines will more than repay for the small amount of labor applied.

Back-entrance Nests. To enjoy the best results from poultry it is necessary to conform to their likes and dislikes as far as practicable. Fowls take especial delight in secret nests. This natural inclination to deposit their eggs in inconceivable places is the cause of much loss and annoyance to owners. Circumvent therefore the hens by constructing nests with the entrance from the rear, and away from the light, while the eggs are to be gathered from the front by hinged doors. Such nests will be found fully as acceptable to the hens as the one under the brush heap. One tier of nests may be built above another if necessary, the lower ones being 20 inches above the floor.

Better than Chasing them. An exchange says: When I wish to capture a fowl I take my crook and a sack, throw down a bit of feed, and while they are scrambling over it I quietly pull in and suck the one I want. The thing is done before the flock realize that I have made a motion, and the bird is so astonished that it rarely utters a sound. For culling out or separating a flock of poultry it is almost indispensable. Get the flock in a small yard or shed, and instead of plunging and diving among them and frightening them into fits move quietly about and hook out those you want. My crook is five and one-half feet long and made of wire nearly one-fourth of an inch thick.

Growing green Food. If only one hundred cabbages are grown and stored away for winter it will provide one head a day for over three months, and will be amply sufficient for a flock of 30 hens. Where grass is not plentiful turnips, kale, radish, or even corn, may be sown, and the tops used for green food. It is not necessary for such crops to mature, but they may be used when the tops are only a few inches high, and are given by chopping them into short lengths. In this manner quite a large amount of green food may be grown. An excellent crop, one that may be cut when young and tender, and which will grow out again as fast as cut, is Hungarian grass, and a small plot will answer for quite a large flock.—Mirror and Farmer.

The Best Breed. An experiment made in England for the purpose of determining the amount of food consumed daily by different breeds of fowls, and the daily gain in weight for twenty days, and also the number of eggs produced in a year, resulted as follows:

	Food ozs.	grains.	Gain. grains.	Eggs laid per year.
Dorkings,	6	320	138	120
Games,	4	575	92	100
Buff Cochins,	17	206	44	115
Langshans,	4	51	129	115
Dominiques,	4	335	92	110
Brown Leghorns,	4	308	101	190
Hamburgs,	4	120	95	220
Polish,	4	23	16	98
Guinea Fowls,	4	182		55

It will be noticed that the Buff Cochins ate much more than any of the other breeds, and that the Hamburgs gave the largest number of eggs, and the Leghorns next; the Dorkings and Langshans made the largest daily gain in growth.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication unless you desire. Write only on one side of the paper.

732. **Red Raspberry Roots in an Asparagus Bed.** How can I get rid of them without injury to the Asparagus roots? Would a heavy dressing of salt do it safely?—B., *Dalton, Ga.*

733. **Soft-shell Almonds.** Will these grow and produce a crop in Hanover Co., Va.? How long before they will bear?—JOE.

734. **Filbert Culture.** How far apart should the bushes be planted, how soon will they bear, and how productive are they?—JOE.

735. **Parsnip Culture.** Will some one favor me with the details of culture for these?—S. C. L.

736. **Angle Worms and Carpet Moths.** What is the best destroyer of these insects?—J. G. R., *Detroit, Mich.*

737. **Cauliflower Slug.** What is the best and most simple remedy?—U. U. H., *Toronto, Canada.*

738. **Layering Strawberry Plants in Pots.** As I expect to leave my present place and move to another I desire to layer some Strawberries in pots for removal, and would be glad for information?—C. C. S., *Chautauqua Co., N. Y.*

739. **Watering Strawberry Beds.** Is this considered a feasible course where water is not difficult to be had, and how should it be applied? Will watered Strawberries be softer?—E. L. G., *Cuyahoga Co., Ohio.*

740. **Wires the First Year for Grapes.** Is more than one wire necessary the first year?—VINE, *Trenton, N. J.*

741. **Black Knot on Plums.** How is this ailment which troubles many trees so badly, to be treated?—C. N., *Sangamon Co., Ind.*

742. **Applying Wood Ashes.** May they be placed close to the stems of fruit trees and Grape-vines?

743. **Ashes for Onions.** Will they injure garden seeds? I applied some to an Onion bed lately and no seed came up.—W. W. R., *Toronto, Ont.*

744. **Growing Winter Onions.** Can you give me a little information on the culture of these? Do they need winter protection?—A SUBSCRIBER.

745. **Destroying Cut Worms.** Can some one tell us what to put on plants to keep off cut worms? They bother early Cabbage and Lettuce mostly.

746. **Green Cabbage Worm.** What will keep these off of Cabbage?—C. M. N.

747. **Evaporated Pine Apple.** Have you ever heard of evaporated Pine Apple? Do you think to evaporate this fruit would be practicable?—G. L. L., *Eden, Fla.*

748. **Sawdust for Manure.** Is this article considered of value for manure, so that 50 cents could be paid for a large two-horse load, 1 to haul it?

749. **Salt for Potato Land; Soot.** Does salt possess value for applying to this crop? How about soot?—L. M., *Lawrence, Kansas.*

750. **Worms in Pots and Fern Cases.** Both my pot plants and Fern case show signs of Angle Worms. How can I be rid of them?

751. **Unhealthy Zonale Geraniums.** During the past winter my pot Geraniums have been utterly lacking in vigor and have a bad color, and I wish I knew why?—ANXIOUS.

752. **Culture of Freesias.** Will some one please give me directions for the cultivation of these bulbs?—W. L., *Bangor, Maine.*

753. **Removing Soot from Evergreens.** Can you recommend me a good way to thoroughly clean soot off Evergreens, as those I have on a city lot are getting quite disfigured by it?—R. W.

754. **Blackberry Propagation.** Will you give best method of growing Blackberries from root cuttings?

755. **Grape-vines from Cuttings.** What is the best way to handle this business? Should they be mulched, and how deep to be planted?—L. H., *Winchester, Iowa.*

756. **Propagating Magnolia grandiflora.** Can you give explicit directions for growing this tree from seed?—D. W. D., *Conta, Barbara Co., Cal.*

757. **Potatoes, Two Crops a Season.** Please tell me whether I can dig Potatoes at maturity, say about July 15, and plant them again immediately with any prospects of a second crop?—B. T. J., *Washington, D. C.*

758. **Hen Manure for Grapes.** Would this be a suitable application, and should it be mixed with ashes, both of which I have?—Mrs. L., *Daviess Co., Mo.*

759. **Arsenical Poisons and Bees.** Would not the free use of Paris Green, etc., for Codling Moth be dangerous to bees by their consuming some of the poison for the pests? All are insects.—SAFETY.

760. **Killing Quack Grass.** Some years ago seed of this was brought into our soil along with Flax, and the plants have proved a terrible pest. How can they be killed?—L. L. G., *Mower Co., Minn.*

761. **Cats and Gardens.** A remedy to keep these quadrupeds out of the garden without poisoning would be worth something. Who will give it?—AMATEUR.

762. **Lapageria from Seed.** Will you please tell me how to treat seeds of Lapageria?

763. **Dutchman's Pipe from Seed.** I have tried to raise it from seed many times and failed. Shall I keep rather dry as for Cobæa, or all the time moist? Should be thankful for full directions.—MRS. H. J. G. C.

764. **Dandelions in Meadows.** How can land that is full of these plants be cured?—T. L., *Anacosta Co., Nova Scotia.*

765. **Covering Bare Spaces on Rose Beds.** I have two oval beds with standard Roses. What could I plant under them so that the beds would look less bare?

766. **Pruning Marechal Niel Rose.** I have a standard planted a year ago against a south wall. Last year it gave only one rose, but made five good branches. In July or August I pinched out the points, thinking to make it flower, but each branch threw out numerous side-shoots. How should I prune it now?—AMATEUR.

REPLIES TO INQUIRIES.

706. **Bartlett Pear Planting.** I should plant them sixteen feet in rows, but after the first row is planted, set the next row not opposite, but to range midway between the others, thus giving a space of a few feet more for each tree.—S. M.

713. **Orchard on Undrained Land.** You can do no better than cultivate deep at once, then allow deep surface drains midway between the rows, the way the ground slopes, if ever so little. If a dead level would suggest digging holes through the hard pan 3 feet in diameter, and fill up with stones to within 18 inches of the surface, and six inches with hay or straw, then hill up with the clay thrown out. Scatter the rest over the ground evenly, as it will do no harm. Except in excessive wet seasons this is nearly equal to tile drainage.

714. **Eradicating Willow Roots.** Grub them off one foot below the surface in June. Then keep all sprouts from getting a start above ground, and by fall you will be rid of them. This will hold good for Sassafras and Persimmon. But few will be found the following year. The leaves are the lungs of a tree or plant, and by keeping them down the root must die.—S. M.

695. **Propagating Cut-leaved Maple.** This Maple had its origin on my place at Lacon, Ills. It may be propagated by grafting or by budding on the common White Maple (*Acer dasycarpum*) or by cuttings in the propagating house. Budding is the most certain way, done at the usual time or in July and August. I have succeeded fairly well in grafting it by the usual forms in spring. It is fully hardy and among the most desirable of weeping or drooping deciduous trees.—D. B. WIER.

725. **Wood Ashes for Plum and Peach Trees.** Unleached wood ashes is the best special fertilizer for all stone fruits. It is always acceptable, especially on sandy soils. Leached ashes have about one-fourth the value of unleached. A heavy application of leached ashes would greatly benefit a stiff clay soil.—D. B. W.

735. **Parsnip Culture.** The soils most suitable for Parsnips are deep loams upon a dry and open subsoil, but I have grown heavy-weights on many different kinds of soil that are deep and in high condition. They will not thrive on the lightest gravelly soil that has not been highly and constantly manured, nor on poor, stiff, adhesive clays that are not well drained. It may be taken as a rule that where the Carrot does well, there also will the Parsnip flourish. The manuring should consist of a heavy dressing of rich farmyard manure in autumn—say twenty loads to the acre. This should be at once ploughed in, and a top-dressing of forty bushels of ashes, or some other artificial manure, should be given as soon as the young plants are seen through the surface in the following spring. The land should be ploughed deeply in autumn and again early in spring. Thus, being exposed to frost on both sides of the furrow, a good tilth may be reckoned on. The second ploughing should be deeper, if possible, than the first; thus the manure will be brought near the surface to support the plants in early growth. The best time for sowing is as soon as the soil works up finely. The seed should be covered lightly either on the flat or on ridges. The common plan is to sow on the flat; the ridge system is only practiced where the land lacks depth of soil. The seed should be drilled at the rate of four pounds per acre, and be lightly harrowed in. As soon as the surface is dry, a light rolling will leave the surface even, and in a good state for hoeing. The rows of Parsnips should be drilled 14 inches apart, and the plants stand in the row 10 inches apart. Hoeing should be commenced as soon as the plants are sufficiently strong not to be smothered, and the process should be repeated over and over again until the plants become too large. Those that run to seed should be carefully removed. Parsnips are a profitable crop to grow near any good market if the cultivating is thoroughly done.—A. H. E.

617. **Grafting Several Sorts on the Same Tree.** Unless the trees were carefully watched, this would prove very unsatisfactory in the long run, as the strong growing varieties would eventually rob those of weaker growth of their share of nourishment.—C. E. PARNELL.

724. **Herbaceous Plants from Seed.** You will not have much difficulty in obtaining seed of a large number of the finest of the herbaceous plants, and if you make a beginning within the next month you will be able to raise a stock that will bloom satisfactory next year. The best course will be to obtain the seed at once, and sow immediately it comes to hand, to afford the seedlings time to become strong by the autumn. It is a very general practice to sow seed of herbaceous plants in July and August, and when it is of no consequence whether they flower or not the following year, nothing can be said against it. But when it is desired to have them in bloom as soon as possible, sowing in May or the early part of June is essential. Many of the subjects can be successfully raised in the open, but when a few plants only of each are wanted, the preferable practice is to sow in pans, and then place them in a cold frame, where they should remain until the seedlings are strong enough to be fully exposed. Pans of moderate depth and about twelve inches in diameter should be employed, and be filled to nearly one-third of their depth with crocks. For filling, the mixture consisting of three parts friable loam, two parts leaf-mold and one part sand will answer very well. It is a good rule to sow thinly and cover lightly, and as the seed is sown place the pans in a frame occupying a shady position, and keep quite close until the seedlings are beginning to make their appearance. Ventilation must then be commenced, and be gradually increased until the seedlings can be exposed without experiencing a check. When of sufficient strength prick them out on a bed in an open position, and in September transfer them to the borders in which they are to bloom.

727. **Wood Ashes for Plum and Peach Trees.** No better fertilizer can be obtained for Plum and Peach trees than wood ashes, but would not advise mixing with the soil when planting. It is better when applied on the surface after the trees are planted and have made a start into growth. In a Peach orchard planted a few years ago an application of barnyard manure was made on the surface to about one-half of the trees, and the other half a good sprinkling of unleached ashes were applied. A decided difference of the effects of the fertilizers was seen on the following season's growth. While the barnyard manure served as a mulch, and to a great extent a fertilizer, still the trees which had the wood ashes applied not only made a much stronger, sturdier growth, but the foliage had a much darker color, showing how much more beneficial they were for the trees' growth over the barnyard manure. Of course on every kind of soil the benefit would not be so much, as soil having a good supply of potash would not probably show such a large nor so strong a growth. My soil is a clayey loam, and rather deficient in potash, hence, to a great extent, the benefit of the ashes; but on fruit trees of all kinds, and on all soils, an application now and again of wood ashes is a decided benefit.—MANSFIELD MILTON.

611. **Golden-leaved Syringa.** I don't know which of these two plants you refer to, but will tell what I know about them. Philadelphus coronarius foliis aureis is the Golden-leaved Syringa or Mock Orange. It is a free-growing shrub of rounded habit, with golden leaves, which retain their color in summer very well. The flowers are produced in June. They are very fragrant, and of a pure white color. The other, Syringa vulgaris foliis aureis, is the Golden-leaved Lilac, and is identical in all respects to the common Purple Lilac, excepting in the color of its foliage, which is of a yellowish green. Both of these shrubs can be procured of Parsons & Sons Co., Flushing, N. Y.—C. E. P.

628. **Pine Spines and Strawberries.** My experience with Pine Spines has been so unsatisfactory that I would not advise anyone to use them for the purpose indicated. They only harbor or are the cause of many fungoid pests, which will not only destroy or injure the present crop, but all those that succeed it.—C. E. P.

646. **Celery in Sawdust.**—Celery will not keep when packed in sawdust in a cellar.—C. E. P.

707. **Winter Apples for Northern Ohio.** The Northern Spy and Baldwin are the best for such a location. They are thrifty, bear evenly and are well known in market. The Baldwin is subject to bitter rot when trees are young. Greening is a shy bearer. Spitzenburg, Belmont and Peck's Pleasant do fairly well.—E. H. CUSHMAN.

625. **Fertilizer for Potatoes.** Yes, I should say it would injure the seed if dropped upon it. Why not scatter it in the drill and thoroughly incorporate it with the soil before dropping the seed.

686. **Olea fragrans.** I fear your plant is past all help. You should have removed the scale the very instant you noticed them, and not permit them to overrun and destroy the plant. If the plant lives until warm weather sets in, you may plant it out in a nicely prepared border in a partially shaded situation and see what it will do. Keep off the scale by carefully washing, and water sparingly at the roots until it is planted outside and growth commences.—C. E. P.

636. **Angle Worms and Carpet Moths.** Clear lime water made by using a half-peck of fresh lime to a barrel of water and applying the clear liquid after settling to the soil, will kill angle worms. The soil should be soaked with this. The beetles of the carpet moth are to be found in concealed places from October until the following spring; and every effort should be made to destroy them wherever present. A good way is to fold together some pieces of flannel and lay them on the closet floors. These the bugs will find, and then they may be shaken into the fire once or twice a week, returning the flannel again. The moths develop most numerously from June until August, and carpets are the articles they first attack. Entering at the edge they may be repelled by laying strips of tarred paper underneath all around the room. But this will not kill the pest; to do so let the cracks beneath the baseboard and elsewhere be puttied up and a fine line of corrosive sublimate—bed-bug poison—be applied with a brush along the corner. Professor A. J. Cook recommends as the best remedy, to place two or three thicknesses of common toweling over the borders of carpets, wrung out of water just so as not to drip, and then to iron with flat irons so hot as to send a full head of steam through the carpet, and thus kill the larval beetle. If clothing should become infested put it in a close box and drench with gasoline. As soon as the insects are killed the clothing can be aired, when the odorous liquid will escape.

739. **Watering Strawberry Plants.** Last year, under very adverse circumstances, with protracted drought more severe than any ever witnessed here early in the season, with less than ten acres, the total yield of berries marketed was 856 bushels. Of course we resorted to watering in a crude way, by means contrived hurriedly, but which I found to work with great satisfaction, and thoroughly convinced me that, sooner or later, those who will succeed best with Strawberries, either on a large or small scale, will have to resort to irrigation. It is the only way to insure maximum crops each and every year. We applied the water with an ordinary street-sprinkling cart, applying 800 gallons of water to beds 400 feet long and five feet wide, twice each week during the picking season. There was a trifle over two acres of the Strawberry ground which it was impossible to get at with the watering cart, and on this spot the crop was nearly a failure. The first pickings on the beds where no water was applied were fair to middling, but the last pickings amounted to nothing. The excessively dry weather burned up the foliage, and the berries gathered were small and unsightly. My experience with watering was so satisfactory that in the course of another year I will have my plants matured, so that I can apply water to the bearing beds at any time during the fruiting season. There is no doubt in my mind that those who desire to realize the largest results from Strawberry growing will have to resort to irrigation. There have been some statements which found their way in print, saying that Strawberries grown in this way are too soft for market. This is contrary to my experience last year.—P. T. Quinn.

740. **Wires the First Year for Grapes.** While you can get along with one wire the first year yet it is better to put up both wires if you have the wire on hand. Wire on the trellis does not rust as fast as if under cover. I have 500 pounds of wire in my barn that is so rusted as to be worthless. My method is to prune the vine at the end of the first year to two eighteen inch canes, if it has made sufficient growth. After the young shoots start I have a boy go along and break off the shoots, except the strongest two on each cane. As these grow they are turned in the direction of the row and kept in place by a piece of shingle. The vine can be lifted up in hoeing without injury. The shingles also prevent the fall winds from whipping the canes around and twisting them off. I would not use a trellise. The less you are on the land occupied by a young vineyard the better. If the young soft growth is tied to a wire the winds will cause it to rub on the wire until it is sawed through and ruined.—Mr. Skinner.

741. **Black Knot on Plums.** Mr. D. B. Wier is of the opinion that the way to prevent the black knot is never to plant on too heavy and wet soil; secondly, to cut off all affected parts in May and June, and cover the wounds with a thick paint of white lead, turpentine and oil. He also recommends planting only the Wild Goose Plum and other varieties of the Chickasaw family, which do not wear black knots. It may be well to add that no one should expect to succeed with the process of excision, unless the malady is taken in time, and before it has made much progress over the tree. We have found a solution of chloride of lime applied to the wounds made by the cutting to prevent the disease breaking out a second time at these places, as frequently took place where this application was omitted. We may also add, on the subject of soils, that the worst cases we have known were on dry, gravelly locations.

758. **Hen Manure for Grapes.** If used care should be taken to thoroughly mix with the soil. I never like to mix ashes with manure of any kind. Apply one or the other first and then wait a week at least before applying the other. Both are good for Grapes, but should be well mixed with the soil. Usually if the poultry manure has been usually well cared for it is very rich and only a small quantity should be applied at a time to each plant.—N. J. Shepherd.

606. **Propagating Weeping Trees.** The common Babylon and Wisconsin Weeping Willows grow readily from cuttings. The new American and Kilmarnock are budded at standard height on the "Bearridge" or flowering Willow, which is not hardy west. Some other free growing hardy Willow should be used instead. The Weeping Elm is budded on the English Elm, which again is not hardy west. It should work on the American red or Slippery Elm which is hardy. The same facts are true of the various fancy Ashes such as the Weeping, Golden Bark, etc. They may all stand well in the Atlantic States, but the rowdy West is too rough for them. The venerable and erudite A. S. Fuller has lately issued a work on general propagation that is said to be the most perfect of its kind. If he will forward me a copy I will review it and point out any mistakes he may have made in P. G. W.H.N. can order it from P. G. Pub. Co. Brother Fuller is usually right, but we all make mistakes.—D. B. W.

745. **Destroying Cut Worms.** The best method of dealing with this troublesome pest is to poison them by putting a teaspoonful of Paris green or London purple in two gallons of water, and sprinkle handfuls of grass, or green sods, which can then be scattered throughout the patch, walking crossways of the harrow marks. By doing this towards evening after the last harrowing, during the night the cut worms that are deprived of their food will be out looking for fresh pastures and will appropriate of the prepared bait, the smallest particle of the poison of which will kill. If the worms are very thick, the remedy can be repeated, it being easily applied.

746. **Green Cabbage Worm.** Pyrethrum or Bubach applied in either the dry or liquid form is now looked upon as the best remedy against this destructive worm. To prepare the liquid take a tablespoonful of the pure powder to two gallons of water, applying it by sprinkling with a watering pot, or better yet, by force with a pump. Here, as in all cases where we use liquids to destroy insects, especially if as in this case it kills by contact, we must apply with great force, so that the liquid will spatter everywhere and so touch every insect. The dry form is prepared by using one part of the dry powder with forty parts of finely sifted wood ashes, dusting this over the Cabbages. If the mixture is prepared a day or two before using, keeping it in a perfectly tight vessel in the meantime, it will have even a better effect than when used freshly mixed. To sprinkle the infected plants simply with hot water by the aid of a watering can and hose will kill the worms.

748. **Sawdust Manure.** Do you mean sawdust that has been used as litter for horses, or something of that kind? Otherwise it is not worth drawing for manure, much less at 50 cents a load beyond hauling. The old sawdust would be the better, as it is nearer the state of decomposition; but even that which has lain eighteen months in a heap will be years before it is sufficiently decomposed to become anything like a rich fertilizer. Again, on light soils sawdust does injury by leaving it in too hollow a state, and thus making it too dry in a dry season. A. H. E.

751. **Unhealthy Zonale Geraniums.** It is a quite common occurrence to receive complaints of Zonale Geraniums being in a similar condition to your stock. The unsatisfactory state of things has been caused by the plants having been supplied with water so largely in excess of their requirements during the autumn and early part of the winter that the soil became sour, and the greater portion of the roots decayed. To improve their condition a drastic remedy must be adopted. The first step will be to wholly withhold the supply of water, and keep the soil quite dry for about two weeks. The next step will be to turn the plants out of the pots after the soil has been in a dust-dry state for the period mentioned. Shake away the whole of the soil, and repot, using clean pots and a fresh compost. When repotted, place the plants in a pit until they are becoming established and commencing to make new growth.

764. **Dandelions in Meadow.** The presence of Dandelions is usually supposed to indicate a fertile soil. As in the case of all perennial weeds, the cure should have been undertaken when but a few were present, by carefully forking them out; now, as the meadow is full, that remedy is out of the question. A common plan, when weeds get full possession of the ground, is to break up and well cultivate the land in green crops, but this is not always desirable. I would try the effects of grazing the field, or killing the weeds by a liberal use of manure and grass seeds, applying a good dressing of farm yard manure and gypsum, and strewing the ground with a heavy seeding of clover. Manure this clover well, and force it into luxuriance, when it will smother out all weeds.—C. G. F.

750. **Worms in Pots and Fern Cases.** Clear lime water is the best for dislodging worms in pots and also in Fern cases. It is prepared by adding unslacked lime to water in the proportion of a peck to eight gallons of water. The water must stand until it is quite clear, and be then carefully poured off so as to avoid disturbing the sediment of lime in the bottom of the vessel. It will be necessary to water the case two or three times, with an interval of four days between each watering. The best course, if the plants are not well established in the case, will be to leave them undisturbed until next month, and then take them out and renew the soil, for if the bed contains a large number of worms, it is very probable that the soil has become mixed with the crocks, and the rapid escape of superfluous water prevented. The Ferns in pots should be watered with the limewater at the same intervals as advised for the case. A. H. E.

749. **Salt for Potato Land; Soot.** If the soil is quite light, salt might well be applied, but not otherwise, as it makes heavy land work badly for years after its application. Soot is a good fertilizer for almost any crop, and that on any kind of soil, and will be sure to act well in the present case. Salt is applied at the rate of five to eight bushels per acre. The sooner salt is sown the better. Soot should be sown at the rate of fifty or sixty bushels to the acre, and would be best applied as soon as the potatoes are planted. A. H. E.

752. **Culture of Freesias.** When required for the decoration of the conservatory or indoor apartments Freesias should be grown in either five or six inch pots, the former being preferable. But when grown simply for the supply of cut flowers they may, to economize space, be put in shallow pans or boxes. An efficient drainage is necessary, and a light rich mixture should be used. A compost of loam, leaf-mold and sand will be the most suitable. The pots should be filled to within about one and a half inches of the rim with the prepared mixture, and the bulbs be placed on the surface about two inches apart each way. They are then to be covered to a depth of about one inch with soil, and be placed in a pit or greenhouse. The soil should be kept moderately moist only until they have made considerable progress, but until the leaves have made their appearance very little water indeed will be required. Subsequently the water supply must be increased, but not to any great extent, as the Freesias do not require at any stage very liberal supplies of water, and an excess will be decidedly hurtful to them. When in full growth a light and airy position is the best.

765. **Covering Bare Spaces in Rose Beds.** The beds can be planted in summer and autumn with Mignonette, Virginian Stock, Escholtzia, and other annuals, the seed of which should be sown on the bed in the spring. We have followed this plan with great success for many years, and plants of this description that can be removed once or twice a year to admit of the ground being enriched for the roots of the Roses, are much better than those of a more permanent character.

759. **Arsenical Poison and Bees.** There is no danger whatever to bees or the bee keeping industry in the proper use of Paris green or London purple in fighting the Codling Moth. This valuable remedy is not applied till the blossoms have fallen and the young Apples are about the size of small Peas. The bees only work on the blossoms, and so are gathering the delicious nectar and doing valuable service to the fruit grower in fertilizing the blossoms some days before the poison is applied. Thus there is no possible objection on this score to the use of this remedy, while the advantages gained are exceedingly great, indeed so great that no pomologist can afford to disregard them. Careful and elaborate experiments have shown us this spring that either the kerosene and soap mixture, strong soft soap solution, or a strong whale oil soap solution, will each kill the eggs of plant lice just as they are about to hatch, and the young lice just after hatching. This, however, need be no offense to the bees, for it should be used just before the leaves appear; just as the buds are opening. It is more economical to apply this early and we are more certain to reach and destroy every louse. The lice are then more exposed, and there are no leaves to protect them. —A. J. Cook.

766. **Pruning Marechal Neil Roses.** It was a pity you pinched out the points of the strong Rose shoots, as this has had the effect of weakening the plant to some extent through the production of the side growths. What you must do now is to shorten, that is, cut back so much of the main branches as are green to the eye and soft to the touch, and then treat similarly each of the remaining side shoots, cutting the weakest to one bud and the stronger to a couple of buds. This would mean shortening the main branches a foot or less, and reducing the side shoots to one or two inches. When cutting the shoots, be careful to do so close to a plump bud, which points outwards from the tree. Without seeing the tree it is difficult to give you better instructions, but you will no doubt find this plan will answer.

624. **Dog Nuisance.** Notify their owners to keep them at home or else you will shoot them.

738. **Layering Strawberry Plants in Pot.** When a lot of Strawberry plants are wanted for a new bed, all that is necessary to do is to fill pots two or three inches in diameter with soil, and "plunge" or plant the pot just to the surface level, placing the unrooted "runner" of the Strawberry plant on the top of the soil in the flower pot, and laying a small stone or clod on it to keep it in place. The runners so treated will form plants in two or three weeks.

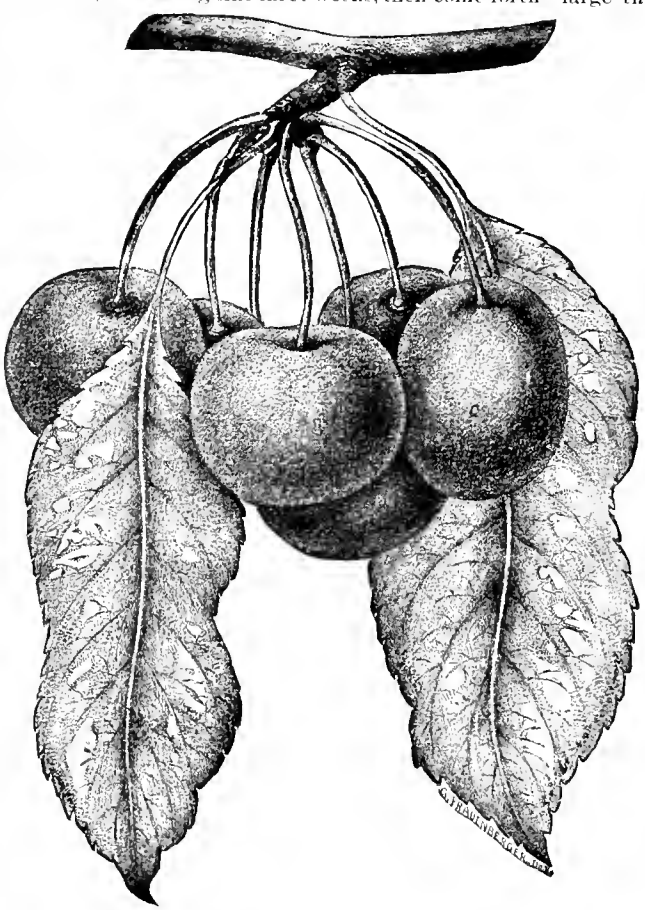
688. **Sowing Strawberry Seeds.** Sow the seeds on the surface of fine, rich, sandy loam moderately packed in shallow seed boxes. Sift over the seed one-eighth of an inch in depth of the same soil, and place the boxes in a cold frame, sheltering them with a whitewashed sash. Keep the soil rather moist but not saturated with water. It will be well to rub a little very dry packing moss through a a sieve and over the boxes with a very thin layer of this to aid in retaining a moist surface. The young plants should appear in about two weeks. If the seed is sown early in spring the young plants may become large enough to plant out in their permanent bed early in autumn but when the seed is sown as soon as the fruit ripens, they rarely become sufficiently large for transplanting the same season. In this case it is best to leave the boxes in the cold frame until spring.—E. S. G.

The Bigarreau Cherries; A New Variety.

The class of Cherries known as the Bigarreaus has always been a favorite one with growers and consumers. A chief reason for this is found in that strong distinguishing mark of the class, namely, a very firm flesh. For who does not prefer to handle and eat a firm Cherry that is otherwise delicious than one which is soft and liable to become mushy.

The list of varieties in this class is not very extended, but in it is included such favorites as the Rockport Bigarreau, Napoleon, Elkhorn or Tradescant's Black, and the Yellow Spanish. Of these the Elkhorn is the best late Bigarreau generally known, for although the quality is not the highest, it is so handsome, productive and so pleasant as a dessert fruit that it is decidedly valuable.

One object of this article is to call attention to a recent promising addition to the list of Bigarreau Cherries, namely, the Windsor. This Cherry was originated by James Dougall of Windsor, Canada, who placed it in the hands of Ellwanger & Barry for dissemination. It is described as being of large size, liver-colored, resembling the Elkhorn or Tradescant's Black Heart, but ripens three or four days after that variety, and is otherwise quite distinct. The flesh is firm and said to be of fine quality; the tree hardy and prolific. A variety possessing such qualities should prove very valuable for both market and family use.



A NEW BIGARREAU CHERRY. THE WINDSOR.

Pests of the Orchard.

G. SIMONS, HILLSBOROUGH CO., N. H.

Every fruit grower is familiar with the web nests of the Caterpillar, and the damage which is liable to occur if the nests are left unmolested. This pest is well known, yet its habits are not so well understood.

The eggs are laid by a yellowish-brown, night-flying moth in July and August. She lays her eggs in oval rings round the smaller twigs, which contain several hundred, and are covered over with a mucilaginous substance, which protects them from the wet and serves also for food for the young when they hatch. In the spring when the weather gets warm they come forth and commence at once to weave a tent home.

From this tent they sally forth semi-daily and forage on the green and tender Apple leaves. They are voracious eaters and will oftentimes destroy the foliage of large trees in a short time if not disturbed.

When the Caterpillar is matured, or their food gives out, they leave the tree and seek some sheltered spot in which to spin their cocoons. These cocoons are light-colored and may be seen under the rough bark of trees, about fences or other protected places. They remain in these for the length of something like three weeks, then come forth to lay their eggs as before described.

If the Caterpillars are allowed to go on and multiply, as they do incredibly fast, they may in a few seasons increase to such an extent as to entirely destroy the foliage of trees, the effect of which is deplorable, and at the period of the season when the leaves are most important to the tree and growth of the fruit.

How can they be destroyed? The winter season is a good time to destroy the eggs, which can be readily seen on the small trees and lower branches and removed by the hand.

If they have been neglected and allowed to hatch, attack them with the hands, a stick or brush and destroy them. They are not very early risers and may be found at home in the morning, so it is well to give them an early call. If they have gone on a foraging expedition call earlier next time.

The Wild Black Cherry is a favorite tree with the Caterpillar. The tree is quite common on careless farmers' grounds and is of no use except to breed Caterpillars. All Wild Cherry trees should be cut down.

Poison the Plum Curculio.

D. B. WIER.

There seems to be no doubt whatever but what the Plum Curculio (*Conotrachelus nenuphar*) can be well nigh exterminated everywhere, and regular crops of stone fruits grown, by simply spraying the trees with arsenical poisons (Paris green or London purple) in water. (1) As soon as the buds begin to swell in the spring. (2) Again two weeks after the petals fall; (3) then after three weeks again. (4) To have perfection, the trees should be sprayed as soon as through blooming with a weak kerosene and soap emulsion; this will destroy the Leaf Lice (*Aphidæ*) and Plant Bugs (*Hemiptera*) that puncture the young fruit and cause it eventually to rot.

A Michigan gentleman told the writer recently that he had in his door-yard two large thrifty European Plum trees. They bloomed every year, but the Curculio laid her eggs in nearly every Plum each year and all the fruit that was not wormy rotted before ripening. Spring before last I sprayed the trees thoroughly once with London purple in water about two weeks after the blossoms fell. That year they matured so great a crop of the finest fruit that I was obliged to prop up every branch. But to my great sorrow, the great crop of fruit so exhausted the trees that the next spring both were dead. The spraying seemed to kill nearly every Curculio, scarcely a fruit showed her ovipositing mark, and the Plums all ripened without rot.

This shows two valuable lessons. (1) Spraying has proven a success for this insect, (2) and that an over-burdensome crop of fruit is deathly to a fruit tree, especially a Plum tree.

These sentiments are exactly in line with sense, reason, and my experience with Plums, and especially our Wild or Native Plums. For these Plums have been through all past time the natural food plant and breeding place of the Plum Curculio. This beetle passes the winter invariably in the beetle state, holed up like a woodchuck in some secure place, and emerges in the spring very hungry; she at once seeks her natural food plant, these Plums, on which to feed, seemingly in preference of all other trees if they are to be found. She usually reaches them before they bloom, then just before the blossoms open is the time to spray the trees, and thus kill nearly all of them.

But it has been determined that for some reason that many of the beetles do not lay their eggs in the fruit until June. Why this is the case we have not determined, perhaps it is because they are not old enough, hence the necessity of late spraying, for it is probable that these late ovipositing beetles reach the trees at a late date.

It is reasonable to suppose that the native Plum being her natural food plant, and if they are within her reach, that about all the Plum Curculios will gather on them. But also, if they are not within her range, that she will be forced to accept allied plants of the Almond family, to which the Plum belongs, such as the Cherry, Peach, Apricot, etc., and also lay her eggs in their fruits. It is of course possible that the Cherries, being so near the Plums, that they may be as acceptable to her for food as the Plums, but it is hardly probable. Therefore, it seems entirely reasonable that if we have plenty of native Plums in and around our orchards of other fruit trees, that by spraying the Plums we will destroy the Plum Curculio sufficiently for all practical purposes, and protect all other fruits from her destructive work. All evidence and experiments so far in this line show conclusively that, if we expect to have good sound fruit that we must spray our fruit trees.

THE COMPLETE GARDEN.*

XVI.

BY A WELL-KNOWN HORTICULTURIST.

THE VARIOUS KINDS OF FRUITS.

THE APPLE.

This, the most important fruit of our climate, can hardly, except in the dwarf section, be termed a garden fruit, for standard Apple trees require for their best development not far from four square rods of space each. Still, everybody who has a fair piece of land about the home will want to crowd in one or more standard trees somewhere, and where there is land for an orchard the Apple deserves attention before any other tree fruit.

Selection. By a good selection of varieties and proper management, the season of the Apple may be extended almost the year through. The following list embraces reliable sorts that extend over the full season of the fruit. The letters following each variety indicate the sections of the country, E for East, C for Central, N for North or Northwest, S for South, where the variety they follow shows special adaptability, although suitable usually for other sections also.

Summer Apples.	Siberian Crab E. C.
Benoni E. C.	Twenty Ounce C.
Carolina Red June C.S.N.	Winthrop Greening E.
Early Harvest E. S. C.	
Early Joe C. N.	Winter Apples.
Early Pennoek C.	Baldwin E. C.
High Top Sweet C.	Ben Davis C. S.
Hocking C.	Esopus Spitzenberg E.
Keswick Codlin C.	Golden Russet of Western N. Y. E. N.
Primate C.	Hubbardston Nonesuch E.
Red Astrachan E. C. S. N.	Jonathan C. S.
Sops of Wine E. N.	Minister E.
Summer Pearmain E. S.	Northern Spy E. C. N.
Summer Rose S.	Rawle's Janet C. S.
Sweet Bough E. C. S.	Rhode Island Greening E.
William's Favorite E.	
Autumn Apples.	Ribston Pippin E.
Duchess of Oldenburg E. C. N.	Roman Stem C.
Dyer C.	Roxbury Russet E.
Fall Orange E. N.	Seek-no-further E. C.
Fallawater C.	Smokehouse C.
Fameuse C. N.	Swaar E. C.
Fall Pippin C.	Tallman's Sweet E. C. N.
Gravenstein E. C.	Tetofsky N.
Late Strawberry E. C.	Tompkins Co. King E.
Lowell C.	Wagener E. N.
Maiden's Blush C. S.	Wealthy N.
Mother C.	Willow Twig C. S.
Munson Sweet C.	Wine Apple C.
Porter E. C.	Wine Sap C. S.
Rambo C. S.	Yellow Bell-flower C. S.

Dwarf Apple Trees. These are obtained by grafting on the French Paradise and the Doucain Stocks, mainly the former. Paradise dwarfs are the smallest, forming but mere bushes, and which bear within three years of planting. While these are not to be strongly recommended where there is room for standard trees, unless for their oddity or ornamental qualities, still they may be made to serve a useful purpose in all small gardens. A common way of planting them is between the standard trees in young orchards, leaving them here until the standards require all the room. Doucain dwarfs are intermediate in size between Paradise and standards, and will produce small trees which will last many years. The following varieties succeed best as dwarfs:

Summer Apples:—Astrachan Red, Early Harvest, Keswick Codlin, Large Sweet Bough. *Autumn Apples*:—Alexander, Oldenburg, Gravenstein, St. Lawrence, Sherwood's Favorite. *Winter Apples*:—Baldwin, Yellow Bell-flower, King, Lady Apple, Mother, Northern Spy, Reinette Canada, Red Canada, Melon, Spitzenburg Esopus, Twenty Ounce, Wagener.

Soil and Tillage. The Apple succeeds best in a strong loam, but will thrive in most any kind of soil, excepting very dry sand or such as is wet. Generous treatment in the way of soil preparation and culture, especially for the young trees, is always profitable. Before planting, the soil should be well enriched and worked up deeply, and afterwards, while the trees are yet young, the plow may be run deep beyond the extremities of the roots, but over these the culture should be shallow. Indeed, with an annual surface-dressing of stable manure each fall over the roots after the trees have reached some size, cultivation may be entirely stopped without impairing the vigor or fruitfulness of the trees. While cultivation is kept up no better crops can be grown in the Apple orchard than old garden crops.

Pruning-time for the Apple is seasonable at any time after leaf-fall and until the new foliage comes out in the spring, but early in this period is the better time undoubtedly. In ordinary cases the top should be thinned so as to admit light and air freely. Such a regard should at all times be had for an even distribution of the branches throughout the head that this end may be reached without ever sacrificing large branches. All suckers must be removed from every portion of the tree, as they are apt to impede growth in the proper directions. A tree that is brushy in its interior is always to be avoided. In training trees some favor high heads, others low heads. In the orchard where cultivation is to be done with horses it is better that the trunks be not less than five feet to the first branches, and some growers prefer six feet. On the other hand many orchardists consider that a four foot trunk is best suited to most purposes. The trees are less exposed to storms than those of high top, the fruit is more easily gathered and the pruning is done with greater convenience. The trunks also are better protected from sun when the heads are low.

In the case of dwarf trees it is best to induce the branches to an outward rather than an upward direction, which may easily be done by pruning back to buds that point outwards instead of upwards. These trees should each have a stout neat stake to which they can be tied. Growth should be encouraged for having the branches of nearly uniform size and evenly distributed all around.

General Care. To go over the Apple trees every spring, rubbing off the rough bark and moss, which serve as a retreat for insects, and giving them immediately afterwards a wash with some diluted alkali, is a very desirable course. By this means growth will be promoted, insects will be destroyed, and the appearance of the trees be wonderfully improved. When I speak of rubbing off the rough bark I do not refer to the harsh practice sometimes indulged in of scraping the bark down to the quick; only the loose rough scales should be removed. For a wash ordinary lime wash is often used and with benefit, but I prefer a moderately strong wash of potash water or of a common soft soap solution, to which a little sulphur has been added.

(To be continued.)

Weeping Forms of Trees.

WARREN H. MANNING, MIDDLESEX CO., MASS.

Our list of Weeping trees is increasing every year, and doubtless will increase until about all our worthy and many unworthy species are represented by weeping forms.

These varieties run more or less distinctly into natural and unnatural forms. Many of them are little less than hideous deformities, with no beauty, short-lived and fit only for a collection to illustrate what Nature can produce in the way of monstrosities.

Others are graceful, pretty and long-lived; worthy of a place in the finest ornamental grounds, to lend the charm of their graceful outlines to the more formal types. Often the weeping forms are more dwarf than the originals, making them suitable for small grounds, where larger growing kinds would be inadmissable; they must, however, be used with caution.

We now and then hear a protest against the propagation of abnormal forms. I fail to see how such a protest can be supported; it would be as reasonable to oppose the propagation of new fruits, for they are variations from the originals. It is true many of the varieties perpetuated are unworthy of cultivation as objects of ornament in cultivated grounds, and it is also true that many of the fruits sold are unworthy of a place in the garden, but it is only by raising the good and the bad that we can make an improvement. When there is a greater variety the undesirable kinds will gradually drop out of cultivation. They are all valuable in helping to determine the laws that govern plant variation, about which so little is known, and are bringing us nearer to the day when we can produce these variations at will.

Horticultural Notes by Samuel Miller, Montgomery Co., Mo.

Oiled Muslin for Hot-beds. In a recent article in the Fruit Growers' Journal some subscriber gives a New York firm fits for lauding it; and pronounces it a fraud.

I intended sending for some, but the express charges would have been as much as it would cost me to make it myself. I bought the thinest unbleached muslin; to a quart of linseed oil (boiled), I beat four eggs into a froth and mixed with the oil. With this the muslin was coated twice. This don't leak a drop, is water proof. Had the mercury down to 19° one night, but it did not hurt a plant, except a few under the space where a sash had slipped a few inches.

In the many years that hot-beds have been a part of my work, I never had finer plants than at this time (April 20th), but we don't trust to set out yet, as last night made ice $\frac{1}{8}$ inch thick in low places.

These frames are so light and easily handled, that no more glass for me on hot-beds. Some object to their lightness and liability to blow off, but this is easily remedied by a few leather straps and nails to button them on. Even this is not necessary where my bed is, as it is protected from any wind. Even if they do go a kiting there is no breakage. A sudden storm once unroofed a bed of mine and it took me half a day to replace the glass. Shall use this for a roof over a drying apparatus; the fruit will not scald, as it sometimes does under glass.

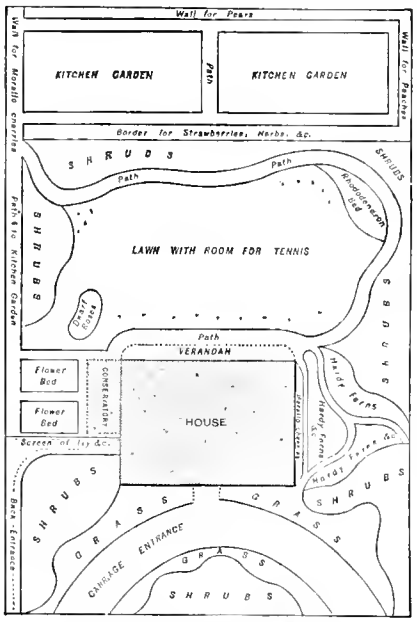
The Round-headed Apple Borer. With all the warnings and all the remedies given in the journals, there are still more Apple trees destroyed by this pest than by all other causes combined. Although some contend that it is not infallible, I know that in all my experience not one borer has been found in trees where this was properly done at the right time. Entomologists say that in June the parent deposits her eggs at the root of the trees.

Before that time clear away the ground an inch or two around the base, then wrap thick paper around for a foot or 18 inches, tie to keep on, replace the earth and the tree is safe for that summer. I find this about as simple and as little trouble as any other plan. Fine wire screening will be the thing in course of time, if it can be obtained cheap enough.

The White Butterfly and No Cabbage. For some years it has been almost impossible to raise late Cabbage here; even the early is often spoiled by them. If one is on the lookout in the spring when the first of these white butterflies make their appearance, and kills every one, it will make a great difference later in the season.

Sometimes they gather around a little pool of water in large numbers, so that if one loads a gun with fine sand instead of shot, and gets within ten or fifteen feet of them, more can be destroyed in an instant than one can kill with a brush in a day.

ABORTIVE PLUM BLOSSOMS. It seems an established fact that the Blackman Plum is no good; that it blooms but never bears fruit.



Plan of Half Acre Garden.

How this ever got a name and a place on lists of fruits I cannot tell, but certainly it has been a mistake.

This spring my Deep Creek Plum bloomed finely, but did not set a single Plum; the same with the Caddo Chief. But this latter has a habit of doing this on young trees, I am told. That the Deep Creek may need a fertilizer might be an excuse in the minds of some; but in one place it is on the same tree with Golden Beauty, which bloomed at the same time and which is full of fruit.

I am sorry for the Deep Creek, as it is considered the best of Plums. My Mariannas are now well set and will need curculio watching. Hope this will come up to its description better this year than heretofore.

A FRUIT GROWER'S HOME. How a man owning land can live without choice fruits and flowers is a mystery to me. From where I now sit I can look out and see Spiræas and Japan Quince in variety, Locusts, Snowballs, Laburnum, Roses, Paeonies, etc., on the lawn in their glory and coming on.

Pass through the house and on the other side look upon a show of Tulips that would do an artist's eyes good. Looking from my back door I can in one sweep of the eyes see Apple, Pear, Peach, Plum, Grape-vines, Currants, Gooseberries, Service Berry, Mulberry, Quince, and in fact almost every fruit-bearing tree worth raising here. Looking towards the northeast one can see Hickory trees, upon which are grafted Pecans, Pecan Hybrid, and varieties of Hickory Nuts.

A few rods off is a hot-bed 16x5, filled with splendid plants ready to set out. No rain here for three weeks, too dry to set out; but this morning, April 29, we are having a splendid rain, and it makes things look fine.

Talk about dull care, or getting lonesome in this isolated place! Why a man would have to be lost to all that is beautiful in nature to get the blues here.

THINNING OUT FRUIT. This is the time to see to it that fruit trees don't overbear. Some say it is too much trouble, but they may have never tried it. It is surprising over how many trees a man can go in a day. Apples, Pears and Peaches often need it. Some will say how many shall I leave? I say thin out so that where grown no two specimens touch each other. I have often got just double the price for fruit of the same variety on similar trees, and simply by thinning out so as to have them all fine. I once sold Crawford's Late Peaches at $2 per bushel, when a wagon load just across the street was measuring the same variety for 50 cents per bushel. My load was sold out first, and many disappointed by not getting of mine.

Plan of Half Acre Garden.

The annexed engraving represents a small garden planned to a good purpose. The space allotted to each subject being regulated in such a way as not to allow of any one essential of a garden about the size of that given predominating above the rest.

At the first glance, perhaps, the space marked out for shrubs would appear to be somewhat in excess, taking into considera- the space at disposal. When, however, our suggestions of intermixing a few standard fruit trees among the other deciduous and evergreen trees and shrubs are carried out, this will greatly modify any such apparently undue extent of ground. The margins of shrubs can also be most suitably planted with hardy herbaceous and other dwarf flowering plants, allowing a broader margin for such where the width marked out is proportionately wide.

In a small garden we would prefer to allow for these necessaries in this way, far before cutting up the open spaces into flower-beds, as may very frequently be seen, even where the garden space is most limited in extent. The lawn will then appear of greater dimensions than it really is, and more facility will be offered for the arrangement of such garden recreations as lawn tennis, etc.

In the event no such games being desired, we would advise the addition of a few strong clumps of comparative dwarf shrubs or plants, such as Paeonies, Hydrangeas, or Rhododendrons, in preference to marking out any set designs.

Some Simple Bedding Arrangements

I have found the following combinations very effective:—

One massing or combination is most beautiful—Heliotrope and Cineraria maritima. One or more big beds should be of these.

Calceolaria amplexicaulis makes a grand bed, but does not mix very well with many flowers; does well with sweet variegated-leaved Geranium.

Geranium, Indian Yellow, a lovely salmon pink, with G. Lucius, a deeper pink.

Verbenas, deep and light purple; also with Cineraria maritima and Centaurea.

Verbenas, scarlet and pink together.

French and African Marigolds.

Bed of Zinnias and bronze-red Cannas.

Small bed of Fuchsia, single white and scarlet (Cannell's Gem and Delight are two beautiful sorts.)

Salvia patens with green Cannas and sweet-leaved Geraniums.

Some pink Geraniums, with Mme. Crousse, salmon-pink, Ivy-leaved Geraniums towards edge.

Bedding Nasturtiums in any combination.

I think this list includes the most desirable things in good mixture.—J. in Garden.

How to Set Cabbage Plants Easily and Rapidly.

S. C. FARNHAM, GENESEE CO., N. Y.

1. Mark out the ground ready to set.

2. Pull the plants, sort them, placing the roots all the same way and as evenly as convenient. Then puddle them in mud and set closely in pans and boxes ready for use. This is best done a day or two beforehand.

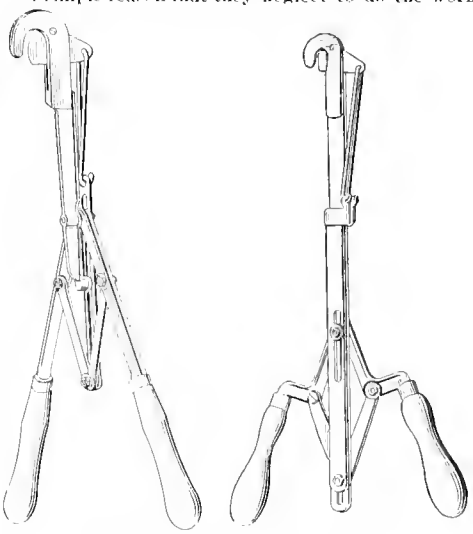
3. Have an active boy take a bunch of these and stand in front of you and facing you.

4. Take a common hoe and strike the corner into the ground where the plant is to stand. Raise the dirt just a little, and the boy holding the plant by the leaves sets it into the hole. Remove the hoe quickly and step on the raised dirt close to the plant, thus "setting" it firmly. Every plant will live, even in a dry time, if the hoe is put down into the fresh dirt. One can keep regular steps across the field, stand up straight, keep clean hands and pants, and set them as fast as a boy can drop them. If the plants lean a little no matter, they will stand upright after they get to growing.

I can set plants in this way faster than with a "dibble," and what was one of the hardest and most unpleasant jobs of the season has now become one of the easiest. I think a trial of this way for a few minutes will convince any one that it is a great improvement—in comfort at least.

New Pruning Implement.—The Myticuttah.

This is an implement that has been recently perfected in England by the Standard Manufacturing Company, Derby. Some years ago the same company introduced the standard tree pruner, which has proved of great service in lopping and pruning tall trees, the implement combining lightness with strength. The myticuttah is on the same principle, but of the length of hedge-shears, and though much lighter will sever branches ten times stronger than any ordinary shears can remove. It is a small implement of great power, easy in action, and will be found serviceable in thinning fruit and other trees and bushes, of which so many are in need of assistance in the manner indicated. Those who have tried the new implement find it answers its purpose well. It is represented partially open and closed in the engravings.



The Myticuttah Pruning Implement.

GETTING RID OF ROSE BUGS. This vexatious pest it seems impossible to dispose of except by shaking and hand-picking. And even by these means many give up the task in despair, for the simple reason that they neglect to do the work early in the morning. Defer it for a few hours and it is difficult to catch them. At night, just as dusk approaches, is also a good time to gather them. Twice a day is none too often. One way is to take a small hand-dish and hold it under the bushes, and knock the bugs off into it. By such means you may very soon clear your bushes of Rose bugs. Rose culture may be helped against this pest by putting among them occasionally an old-fashioned White Rose. They prefer this to the hybrid perpetuals. To get them all together on one bush they are so much more easily destroyed.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. JULY, 1888. No. 10.

July.

Kissed by the bright rays of the sun,
The hot July comes round at last;
Full half the year its course has run,
Yet who will e'er lament the past?
The haytields scent with rich perfume
The calm air; harvest is begun;
But yet the rarest flowers bloom,
Kissed by the bright rays of the sun.

PROGRESS. Previous to 50 years ago scarcely any attention was given to the cultivation of small fruits. One needs but to contemplate the product in the same line at this time to realize the advances we are making in horticulture.

ONE OF THE FIRST pieces of work carried out at "Woodbanks" was the planting of a line of Norway Spruce trees within three feet of the northern boundary of the place for a wind break. The trees were set two feet apart with a view to thinning them to four feet later.

SIMPLE BEAUTY. On a neighbor's lawn is an attractive mound of rockwork with not a thing growing on it but the common Moneyvine. When the crop of bloom is out nothing scarcely could excel the beauty of this mound. The plant is to be had without cost everywhere.

FIRST-RATE MANURE FOR ASPARAGUS. Those who have the privilege of residing within easy distance of the sea should gather as much sea-weed as possible, and give their Asparagus beds a heavy dressing with it. It is one of the best manures for the Asparagus, and dispenses with the necessity of having in the spring to apply common salt to the beds. The Asparagus is a seaside plant, hence its fondness for saline manures. Winters would be perhaps the best time to apply the weed, afterwards covering it with an inch or two of soil.

A NEW ENEMY to the Peach is reported from Delaware and Maryland. It is a worm from a quarter to three-eighths of an inch long, and about as thick as a pin. Its color is dark brown. These worms eat out the entire hull or leaf end of the young shoots, which, of course, kills the ends of the twigs. Some orchards in Kent and Sussex, Delaware, look as if a fire had passed over the ends of the limbs and scorched the twigs and leaves. Its origin and habits are not yet known. The area in which these worms appear in destructive numbers is comparatively limited.

NO NURSERY STOCK TO SELL. From the numerous orders for seeds, plants, etc., addressed to this office throughout the year, and which no doubt come from our new subscribers, it seems necessary to again and again repeat that the owners of this paper have nothing, absolutely nothing in such a line to sell. This journal was started as a strictly independent paper which with having no outside interests at stake could speak the whole truth concerning any kind of plant, tree or article that might be under consideration, and so long as our readers continue to stand by it as they have in the past we could not think of departing from the rule. Such a course is also the only just one towards the numerous advertisers who patronize its columns. The fact that we are now conducting experimental grounds in connection with the paper does not effect any change whatever in our attitude towards this matter. Send us no money therefore for any kind of planting stock as it will be returned.

The Cherry Tree Slug.

BY CLARENCE M. WEED, OHIO EXPERIMENTAL STATION.

This insect often does serious damage to Cherry trees by eating off the upper epidermis of the leaf, and as it is one of the most widely distributed species of fruit insects, a few notes on it may be of interest.

The slugs hatch from eggs laid on the leaf early in summer by four-winged saw-flies (called by entomologists *selandria cerasi*). These eggs soon hatch out olive-green slimy slugs, having twenty short legs, which eat the upper surface of the leaf, and cause a badly infested tree to look as if severely scorched. After the last moult the slimy covering is lost and the worms become yellow. During July and August, larvas become full grown and go into the ground two or three inches and pupate. In two or three weeks the flies come forth and lay the eggs for a second brood. Besides the Cherry this insect attacks Pear trees, and is said to sometimes attack the Mountain Ash.

The best method of destroying this insect is to spray the infested trees with hellebore in the proportion of a pound to 40 gallons of water, or an ounce to a pailful. This remedy is cheap, effective and easily applied. Almost any of the numerous spray force pumps now on the market will serve the purpose very well.

Summer Transplanting: Shading Plants.

L. B. PIERCE, SUMMIT COUNTY, OHIO.

After Strawberries were about half grown I learned that three of the largest strawberry growers in the county had about gone out of the business, and that another was planting no new ground.

This foreshadowed a meagre supply and advancing prices for the next two years, and I concluded to put out nearly an acre more, as I had ground that I could use, so we manured and fitted it, after we had first dug the plants, which is the other end first, from what is accepted as good practice.

Our object in doing this was to give the plants a chance to recover somewhat by a preliminary planting and shading. Little trenches are dug, six inches apart, and the plants set thickly and watered. Then a fence rail is laid on either side and other rails laid cross-ways over the plants, a few inches apart. These are allowed to remain a few days when they are gradually separated, and then entirely removed. This process protects from the sun all the plants in a compact bed while they are throwing out new feeding roots and after ten days the plants can be finally planted out without wilting or protecting each plant separately.

Some plants that we used yesterday, which were trenched in two weeks before, had triple the root development that they had when dug, and I cannot too earnestly recommend the same practice, somewhat modified, for all vegetable transplanting. Cabbage plants, carefully trenched or heeled into shallow boxes of earth, thoroughly watered, and allowed to stand where shaded from 9 A. M. to 4 P. M., will in three or four days throw out scores of little white feeding roots that retain the earth and permit the plant to be set regardless of the weather.

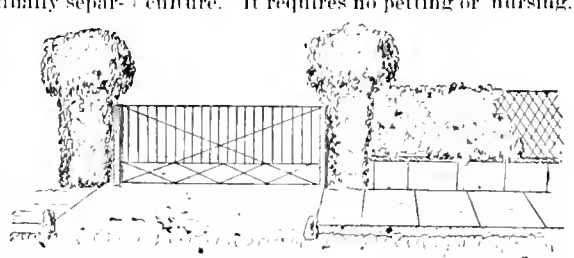
This process allows a buyer of plants to secure them whenever it is convenient, or he can obtain really good plants, and then plant at leisure in the cool of the evening. According to the present way of waiting for a rain, everybody rushes at once and both growers and dealers are crowded to supply the demand. Many plants have been kept standing around waiting for the rain until too big or too spindling, and the dealer, not being able to anticipate the shower, runs short or uses culls to help out.

Where it is necessary to plant immediately after digging, late in the season, some means of shading each plant is desirable. The two old time methods of using Burdock leaves or covering with a handful of green Clover or Grass does very well in the case of a dozen Cabbages or Tomatoes in the garden, but it is not very practicable with Strawberries. The leaves dry in a day and blow away, while Clover bends the leaves of the Strawberry plants to the ground, holding them there and sometimes killing them. What is wanted is a good shade at first that gradually grows less until it is gone a week or ten days later.

The one that to my mind best answers these conditions is a bunch of leaves on the end of a twig. My favorite for this work are Dogwood or Sassafras. The Dogwood makes a flat fan-like protection that does not interfere with the plant in the least. The Sassafras grows in a cluster, but breaks off easily, and having a straight, stiff twig, sticks into the ground easily. I stick them in the ground about two inches south of each plant. At first the shade is dense, but the gradually-withering leaves lessen it from day to day, until they drop or are knocked away in hoeing. The ground is kept damp and cool and the plants are protected in a measure from drying winds.

Some Ways of Using the Virginia Creeper.

One thing decidedly in favor of the Virginia Creeper (*Ampelopsis quinquefolia*) as a popular plant is that it thrives to perfection with the most ordinary kind of culture. It requires no petting or nursing.



Gate Posts and Fence covered with Virginia Creeper.

Unlike many things of like easy growth, it never assumes the character of a troublesome weed. It is, in fact, the ideal climber for draping buildings, arbors, walls, fences, posts, stumps, etc., with handsome verdure. The pity is that such a useful, handsome, hardy vine should not be more widely employed than now by the masses, for the ornamentation of home surroundings.

In this connection we desire to present a few uses to which we have seen this vine

put with such admirable effect that it would be a pleasure to see the methods often applied. Fig. 1 shows an entrance to grounds with the posts and front fence covered with this Creeper. In this case the posts were of good size, eighteen by eighteen inches square, with a top yet larger. Any ordinary sized posts could be built out to thus support the vines for forming strong pillars of green to flank the entrance of a place.

Fence and Garden Arbor Clothed in Green.

For the sake of economy in material even rough unpainted boards would answer, as after the first or second season it would be completely covered from view. The fence in this case consisted of a lattice-work of wire, but something yet cheaper than this would answer for giving it body. Such an enclosure to the grounds would be as ornamental as a hedge, in some respects more so, and there would never be the trouble of spots appearing, through the failure of the growth, as this vine knows hardly any such thing as fail.

Fig. 2 represents a garden fence somewhat similar to that of the first engraving, but with a most delightful arbor of green extending out from and covering a seat at the termination of one of the garden walks. In constructing the frame work of such an affair it matters but little for appearances whether the material be wood or metal, so long as a form of good shape as to general outline is obtained. Of course metal would for the lighter parts be the most durable.

Figure 3 shows an exceedingly graceful and pleasing division mark for between various parts of the garden, as between the ornamental, vegetable or fruit part. The construction of the supporting part is very simple. It consists merely of low Cedar posts set at eight or ten feet apart along the division line, with a chain or twisted wire extending from end to end through holes near the tops of the posts, and to droop slightly between the posts. Another wire should extend similarly from post to post but in this case fixed and to be six inches from the ground. By then planting one strong root of the Ampelopsis on each side of each post in rich soil the entire support should soon be covered with the vine.

While the Virginia Creeper will bear illusage as well as any other plant that grows, it responds quickly to liberal culture. If therefore the grower would have the handsomest results very shortly after planting, he should see to it that the ground is made decidedly rich and stirred up to a good depth wherever a plant is set.

Retarding the Crop.

DANIEL B. LONG, ERIE COUNTY, N. Y.

To retard a crop of flowers, fruits or vegetables beyond the natural season of maturity is often quite as desirable as to force a crop ahead of its ordinary time. As showing what can be done in this line, I will state my experience with some Tulips in my garden the past season. The same plan would be applicable to most any other kind of hardy growth.

In the fall of 1887 I planted two beds of equal size and shape with Tulips, an equal number of the same varieties in each, and each containing over 200 bulbs. In February, when the ground was frozen, I procured a load of solid ice blocks or cakes, covering one bed with a layer of these ice blocks. I framed around it with boards one foot high, similar to the sides of a cold frame, and packed between the boards and the ice over the latter with straw and Sphagnum Moss, varying from three to six inches thick. The latter material, especially, seems a most excellent non-conductor.

On May 24th, when the Tulips of same kind in the uncovered bed were past flowering the ice had not yet entirely melted from the covered one. Fearing the continued moisture from it might rot the bulbs, I removed what was then left. The surface of the ground had now thawed, but the bulb tops were not in sight. They soon showed, through, and without any general exception all came into perfect flower between June 12th and 20th, fully three weeks after the others had, and apparently none the worse for their extended artificial winter.

This may be a useful point to growers of florist's flowers, the demand usually being ahead of supply during June for flowers of showy nature like Tulips and Hyacinths. Watering-place hotels, where they open just after the bulb flowering season, could employ it to advantage on their grounds, at a very nominal expense, and gardeners in private places could readily extend the season of such classes of bulb flowers to the advantage and delight of their owners.

No doubt a similar course could be pursued with many other kinds of vegetation, such as Strawberries, Asparagus and other vegetables, and some flowering shrubs.

Loose Bark of the Cherry; Cherries to Bush Form.

J. L. BUDD, IOWA AGRICULTURAL COLLEGE.

In answer to the query of F. N. as to the cause of loose bark on Cherry stems, Mr. A. M. Purdy says: "Frozen to death is our verdict." As bark bursting of the cherry, and of the stems of young apple trees occurs in climates where the thermometer never goes much below freezing we cannot assume the terse answer to be always correct.

Those who have access to the third volume of Downing's Horticulturist, published in 1849, will find a suggestive paper on this subject, written by Prof. J. B. Turner, of Illinois. His verdict is "death by tight lacing," and his remedy is, "Cut the corset strings." In practice his idea of stripping off the tough "outer ring bark" is not practicable, but in the same volume A. J. Downing gives Nature's own remedy for the trouble in answer to a question from Milwaukee, Wis. He says: "You say the Cherry with you suffers from bark-cracking and gumming. Allow your trees to form low, bushy heads, as near the ground, as may be, prune them scarcely at all, and manure them with wood ashes."

Sooner or later this idea of growing the Cherry in bush form will be adopted in all dry interior sections where hardening of the outer bark of the stem is liable to take place. The effect of this hardening of the tough, stringy epidermis of the Cherry and Plum is well illustrated by grafting the Cherry on well-established young Miner Plum stocks. The scions unite perfectly, and the plentiful ascent of sap through the alburnum of the Plum stock pushes rapid growth. But about the time that new wood begins to form rapidly the trees are apt to die, stock and branch, unless, as Prof. Turner expresses it, the corset strings of the stock are cut by the total peeling off of the tough epidermis.

During the rapid spring growth of the scions the bark of the stock has less than its normal supply of water, and the corky layer absolutely refuses to expand to give room for the new wood deposit.

I only write this to direct attention to the need over wide areas of our country of adopting the bush plan of Cherry growing common to large parts of Europe and Asia.

For like reasons the low cordon system of training the Cherry will become popular with us in yards and along walks and drives when its merits are better known.

Early Strawberries, Late Season.

E. WILLIAMS, ESSEX CO., N. J.

Old "Strawberry Day," the first Monday in June found us unable to find a berry approaching ripeness, the season being later by 10 or 12 days than many of its predecessors. It was June 12th before I noticed the birds had been sampling the blushing cheeks of the advance guard. The season has been cool, with a superabundance of wet, damp weather since the 10th of May. The month preceding that date was cool and dry, and now we are dry again, and the Strawberries are feeling the need of moisture. Such extremes have an unfavorable effect on the condition and prospect of the Strawberry, and I notice they are not as promising now as they were 10 days ago, as the rust has struck them in many places, and as heretofore it does not confine itself to any one or a few varieties, though as usual, more prevalent on some than others. By the way this is a good subject for our experiment stations to study and investigate in view of finding a remedy.

The reports of the Strawberry crop in this region is somewhat conflicting. One grower writes he thinks he will have 1,000 bushels (?) while a near neighbor of his told me today he had just been inspecting them and he did not think he would have half that amount. I hear that the Monmouth Co. crop will average about half the usual amount. If these reports prove to be a true index of the crop it will doubtless still be sufficiently abundant to keep the prices down below the point of profit to the grower. Good berries are now to be had for 10 cents, which with picking, freight, commission and the retailers' profits taken off, does not leave a very large margin for the grower. No need of anyone going Strawberry hungry, that is certain.

A year ago this spring I received a package of Strawberry plants by mail from R. D. Cole, of Cumberland, Co., N. J., and a letter declining to say anything about them further than requesting I should give this new kind, and known as "Pearl," a fair trial along with others, and report results.

The only available place for them at the time seemed to be a row of young vines just trellised in my vineyard, and there they were located with little expectations that

A Neat Division Mark.

they would prove more of a bonanza than many other more pretentious and highly extolled sorts sent me for the same purpose. I find the Pearls are ripening among the first, and their good size, perfect form, handsome appearance, and vigorous healthy foliage, together with their good quality, entitle them to further trial under more favorable conditions. As compared with the Jessie along side, it is fully as vigorous in growth, a little earlier in ripening, fully as handsome, and though the first berries

do not seem as large, in quality it compares very favorably with it to my taste so far, but it is yet too early to say more than that both are promising varieties at present. The reflexed calyx and inclination to neck of the Pearls are valuable features in my estimation in any berry; it is easily removed without mutilating the berry (N. B. I have no plants for sale, neither do I know if it is to be offered, or when).

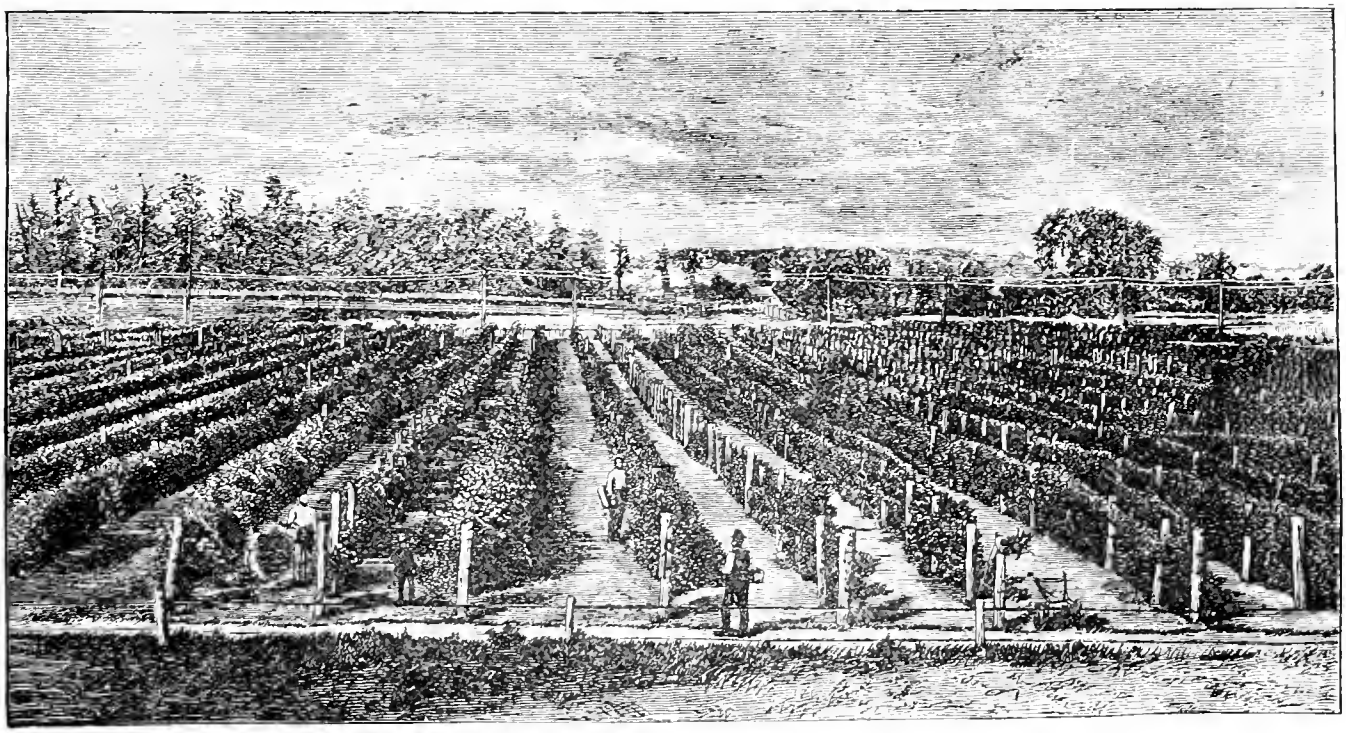
The Sharpless is losing its popularity; the later blossoms do not fill out and 3 or 4 pickings finishes them. The May King is growing in popularity as an early berry, handsome and of good size, vigorous and productive. The Crescent for health, vigor and productiveness is immense, and for the first week or so the berries are sufficiently large for all practical purposes, but towards the last they seem rather small; but with such an immense crop it is difficult to see how it could be otherwise. In quality it is not quite up to the May King, which defect is remedied by close proximity to the sugar bowl; but whoever plants Crescents with a good sort as a fertilizer will have berries "lots of 'em." It is yet too early to make comparisons or draw conclusions.

Grape-Growing in Western New York.

As one proof of the supreme position of Western New York as a fruit growing section, let us point to the magnitude of the vineyard interests of Chautauqua County. It is believed that the district between Silver Creek, 31 miles up the shore of Lake Erie from Buffalo to Northeast just beyond the Pennsylvania line, now represents a larger outlay in Grape culture than any similar sized horticultural district in the country.

The number of acres that were planted during the past spring, according to the Farm and Vineyard, will fairly double the production within three years. There are at present over 2000 acres of vines in Portland township alone, nearly all of which have been planted within the last decade, and in Westfield the acreage of vineyards this year shows an increase of from 150 to 200 per cent. Previous to 1878 the culture had been carried on to a limited extent, there being scarcely any vineyards of more than three or four acres. Since that time the planting and cultivation have been greatly extended, many vineyards embracing from twenty to fifty acres. One of the largest growers has under cultivation over one hundred and twenty-five acres.

At a low estimate 200 acres will be put up on wires this spring and yield their first crop, worth over $15,000. The industry has grown so large that the growers propose to form a shipping association and make arrangements to ship from Westfield, instead of hauling the fruit to Brocton. The shipments from here next fall, by rail, will not fall far short of 100 car loads. The railroads are making arrangements to give growers increased facilities for the prompt and careful distribution of the crop.



A NORTHERN CHAUTAUQUA VINEYARD.

Good judges estimate that in the adjoining town of Ripley the area now in Grapes is equal to about fifteen hundred acres—one-half of which is in bearing. The main dependence is upon the Concord Grape, yet the Catawba generally ripens well. As a general thing they are planted about nine feet apart and pruned upon the tree system and trained upon a two-wire trellis. Vines are grown upon the various soils from the shore of Lake Erie to the brow of Chautauqua ridge, which lies 700 feet above Lake Erie, preference being given to easily worked soils in which posts retain their position.

In answer to the question: Is not the planting of Grapes in this section being overdone? a correspondent replies emphatically no. He says: "There is double the money, net, in Grapes with us at two cents a pound than any other crop we can put upon our lands that are adapted to Grape growing; and at that price more people can and will buy Grapes freely and consume them in their families, hence an increased market. So that if we quadruple our production, there will be an increased demand for them. At the present time the production is not equal to one pound to each inhabitant of our country, and I have no doubt that ten pounds per capita of consumption is within the mark each year, if they were produced."

For the use of the above engraving we are indebted to our valued contemporary the Farm and Vineyard of Westfield, N. Y.

Stock Flowers in the Spring Months.

BY A PRACTICAL FLORIST.

For years we have had Stocks in bloom in April, May, and June, and they are so very useful then, both for cut flowers and decorative pot plants, that their culture is well worth general attention. Their bright and varied colors, and, above all, their sweet scent, delight everybody. They might be used in many spring flower gardens, and where there is no place for them in such positions they might be grown in the borders of the garden or in the shrubberies; indeed, they can hardly be out of place anywhere.

The varieties most suited for spring and early summer blooming are the Emperor, Brompton, and the Giant Cape. Seed of these should be sown about the end of July in a bed or frame anywhere. It should be sown thinly, and covered over with about an inch of soil. The young plants will soon come up, and if transferred into pots of ample size will grow fast throughout the remainder of the season. If sown and grown thinly in the seed bed they may be drawn up on a wet day and dibbled out.

The soil should have a good coating of manure added to it, and soils of all kinds should always have a dressing of soot worked into them before the Stocks are planted. This prevents them from being destroyed by maggots at the root—a common thing where precautions of this kind are not taken.

During winter the plants should be kept very cool in the greenhouse, window or light cellar. In March the plants may be encouraged to grow rapidly, and flowers will soon make their appearance.

In all Stock beds there will be single and double flowering plants; the single flowering kinds some dislike and pull them up, but this is a mistake, as single sorts are just as pretty as the double ones, and in a mixed bed or border they are equally effective; besides, it is an easy matter to save seed in autumn from spring-blooming Stocks, and in many instances it would pay to allow the single ones to remain in order to secure this object. One thing is certain, few things can be more easily grown than Stocks to flower in spring, a circumstance which ought to secure for them the attention of all who love bright-colored fragrant flowers.

American Seed Trade Association.

The annual meeting for 1888 was held with closed doors in Chicago during the second week of June. The first day (Tuesday) was devoted to organization; the real business began on Wednesday, the afternoon being given up to action on the report of committees, of which the Association has quite a number, doing excellent work. The completion of unfinished business, and communications occupied Thursday's session.

The following officers were elected: President, George S. Haskell, Rockford, Ill.; First Vice-President, John H. Allan, Picton, Ont.; Second Vice-President, H. W. Johnson, Philadelphia. Albert McCullough, Cincinnati, was re-elected Secretary and Treasurer—a fitting compliment to his efficient services. F. T. Emerson, Omaha, Neb., was elected Assistant Secretary. The Executive Committee is as follows: William Meggat, Wethersfield, Conn.; John Fottler, Jr., Boston; S. F. Leonard, Chicago; S. E. Briggs, Toronto; H. Wood, Richmond, Va.

The American Nurserymen's Convention at Detroit, June 20 and 21.

Of the active members of this Association something over 150 were present at the opening of the annual meeting at Detroit. Nearly all parts of the country were represented, but more prominently the Northwest. They came not only for business, but to visit points of interest about the "City of Straits," of which there are many.

Notwithstanding the extremely warm weather, and the fact that on account of this, three days' session was crowded into one and one-half, the meeting was a success. Excellent papers were prepared by prominent horticulturists, and though not all of their authors were present to read them, close interest was taken.

The officers for the coming year are: President, George A. Sweet, New York; Vice-President, G. J. Carpenter, Nebraska; Secretary, Charles A. Green, Rochester, N. Y.; Treasurer, A. R. Whitney, Illinois. Executive Committee: George Wiltz, Ohio; S. D. Willard, Geneva, N. Y.; S. M. Emery, Minnesota.

The exhibits in the line of nursery stock and horticultural implements, though probably not so extensive as last year, were interesting. Two tree-diggers, one by Hoover & Gaines, the other by N. H. Albaugh & Son are labor-saving tools, which do effective work. N. H. Albaugh & Son also showed an improved dibble made of steel for planting grafts, the form of blade and handle making it a convenient tool.

H. S. Anderson, a sample of Rofia of good quality. This article has partially superceded the Bass bark for tying buds and other purposes in the nursery, as it is much stronger and cheaper.

McMaster Floor Plate and Stamp Manufacturing Company, a steel barbed strap for securing packing boxes which is readily applied and effective.

E. H. Ricker & Company, vigorous specimens of seedling evergreens, of their own growing.

James B. Wild & Brothers, stock from their cold storage cellars, in good condition. Also samples of Mahaleb seedlings of this season's growth, quite strong considering the season. Also sample trees of Teas' Weeping Mulberry. One four years from graft, well developed, proving it to be an effective ornamental tree.

J. W. Manning, displayed German Iris, with samples from a collection of 40 varieties. These combine a gorgeous display of colors grown with great facility in any soil. They are exceedingly ornamental, and for a month or more from last of May are constantly in bloom. Succeeding the German Iris are the Japanese varieties which carry the bloom late into July.

Charles A Green had a big box of luscious Strawberries, picked at random from plants of the "Jessie." This is truly a fine berry.

President Watrous delivered an admirable address, a synopsis of which will be given in our next issue.

Horticultural Notes by Samuel Miller.

BLACK CAP RASPBERRIES. If confined to but three they would be Centennial for early, Hopkins for medium, and Gregg for late, but could hardly leave out Mammoth Cluster. Souhegan is as early as Centennial, but is no larger, very thorny and too sour. Hillsboro is a promising new one. Golden Queen is not hardy with me, and in starting with six plants two years ago, cannot see a single living one just now. Crimson Beauty, Scarlet Gem and Stayman No. 2, are all three hardy and splendid Raspberries, and usually have fruit on them nearly all summer. Why they are not more generally tried is strange to me. When it comes to the Red Raspberries that grow from suckers, I consider the Turner worth all the rest put together. Schaffer is next, but is too acid for eating fresh from the plant, yet for preserving and eating with ice cream and sugar is hard to beat.

Marlboro and Cuthbert are counted hardy, while here in the latitude of St. Louis they are not. The two past winters they have both suffered so much in the winter that not 1-16 of a crop has been realized. That the dry, hot summers may have had something to do with this is possible, as when autumn comes the large canes that are ripe and should go to rest, get stimulated by the fall rains, and often warm weather in November, when a severe cold snap comes and they are not in a condition to bear it.

I am led to this idea from the fact that some of the young shoots that seem to be tempered properly come through the winter safe. That these two are splendid berries no one will deny, but if I must lay down and put out Raspberry canes, I will give such as Henrietta, the largest I have yet seen, a first place. Schaffer's Colossal, while not quite hardy, has always enough wood left to bear a fine crop at the proper season, and sends up shoots from the ground that will bear splendid fruit long after the others are all gone.

AN ASPARAGUS KNIFE. I have grown this vegetable for half a century and never yet cut off a stem with a knife. Thumb and finger placed at the steam near the ground, bend with considerable pressure and it will drop off. Then you have a delicious dish instead of the tough, tasteless, and often bitter thing usually found at hotels. Some peal the hard outside shell off, which is no little trouble.

The idea that it must be white to look well is to me ridiculous. I want something that can be eaten. Who that has tried this will resort to the knife six inches under ground? Will they answer?

PEACH YELLOWS. I don't know what Peach Yellows is. I beleive that overbearing, poor soil and borers at the root often get blamed on the Yellows.

PEAR BLIGHT. Soon now is the time to give the Pear trees a washing; trunk and up at the limbs with lime, sulphur and a little carbolic acid. It does not smell pleasant to some persons, but that will be gone before the fruit is ripe.

MAKING THEM OVER. To dig out healthy trees and vines when the varieties do not suit one is a most useless and to me a stupid piece of business. If a man cannot graft himself, get someone to do it for him, thereby saving years of time, cost and labor of planting. Particularly is this the case with vineyards of varieties that rot and are not worth sacking. A man recently told me he had rented an acre of Concords that were only five years old, and that if he had known that they could be grafted with better varieties he would have had it done. I would not take $300 for an acre of such vines even if they did rot, as the Concord invariably does here, but would soon convert it into such as Diamond, Empire State and Niagaras, as well as to operate upon with the new varieties so as always to get fruit the following year. Anyone following the instructions of Dr. Stayman, or mine, in a late number of your excellent paper, can soon have the best of Grapes that will pay to sack. I cannot afford to sack Grapes that will bring but five cents per pound, the price of Concords, and for my own use I want something better to eat. Among my 1,000 vines in the vineyard I have but five of them, and these are only kept for Auld Lang Syne. Worden is taking its place, and deservedly so. In a paper I recently saw where the editor advised a man to dig up an orchard of the Blackman Plum trees, as they don't bear. Why not graft them with some good one that will bear? I always have some natural trees coming on to try new ones on, and the same with varieties that don't suit me.

FRUIT CANS VS. POTS FOR STRAWBERRY PLANTS. Melt the ends off, and the seam where joined. The can will then spring apart. Have the ground mellow under the runner. Keep the can tied close. Shut it under the plants in the middle. When rooted draw the tie off and your can will open again so that you have the roots in the cylinder easily handled.

This is less trouble than the filling of the pots, and in my opinion is quite as good a plan. I know a Frenchman who never takes more than one crop from a set of plants. Lets them run enough plants, pots them and then digs his old bed under and sets the new ones. His berries always brought the highest price in market, and he seemed to have good crops. That would be too much trouble for me.

Sometimes when plants are scarce I set them three feet apart in the row, always with the end of the runner when cut off one way, as they always start out in an opposite direction, so there is no trouble in laying them in a row. In this way I have had as good a set by fall as when set a foot apart in the spring. As soon as there are runners enough, stop further progress.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

ZINC SCRAPS FOR CLEANING FLUES. L. B. P., page 147, speaks of zinc scraps on bituminous coal fires to clean flues. I have used it for years. The sulphuric acid gas generated burns the soot without flame, the ash occupying less than one-third the space of soot, necessitating the cleaning of flues but once a year.—*W. N. Whiting, Tioga County, Pa.*

DEPTH OF SOWING PEAS. The writer on "Deep Sowing for Peas" in the April number did not tell how deep or how shallow the Peas were planted. I have planted Peas early, about three or four inches deep, and late plantings about six inches deep.—*E. W. L., Schenectady County, N. Y.*

RED RASPBERRY ROOTS IN AN ASPARAGUS BED. Concerning this trouble which was referred to by a recent correspondent, I should certainly try a very heavy application of salt. There is little danger of injuring the Asparagus. I have used salt in this manner to an extent that destroyed almost all kinds of weeds without the least perceptible injury to the Asparagus.—E. S. G.

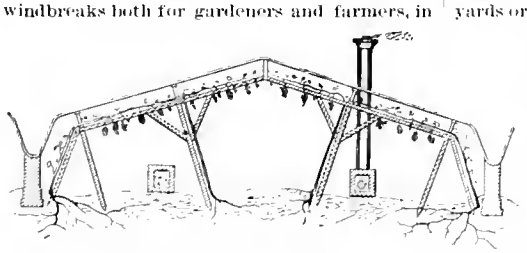
WEEPING TREES FOR THE WEST. The suggestive note of D. B. W. in the June number brings to mind the fact that we have very few good weeping trees in the West, even when they are propa-

gated on hardy stocks. Of those common to eastern nurseries the Cut-leaved Weeping Birch (*Betula alba laciniata*), Weeping Popular (*Populus grandidentata pendula*), Weeping Mountain Ash (*Sorbus aucuparia pendula*), and Wisconsin Weeping Willow about complete the list. Weeping trees not yet common found on our grounds are Caragana spinosa and Caragana grandiflora, budded on C. arborescens, Salix Napoleonis, Salix Babylonica (of the Volga), and Betula Amurensis.—*J. L. Budd, Story County, Iowa.*

LARGE STRAWBERRIES. I see in April number of POPULAR GARDENING that some one has grown a Strawberry seven inches in circumference. We, out here in Michigan, do not think anything of that. I have had berries (Sharpless) over eight inches, and one measured in presence of witnesses, over eight and a half inches. A grower near here claims to have had one that went over nine inches.—*R. B. Newnham.*

GRAFTING PEAR ON APPLE. The article on page 57 reminds the writer of some of his youthful experiments in that line of grafting, but perfect union was not produced. None fruited which were grafted above the ground and none lived more than three years. The growth was rampant and the wood spongy which caused them to winter-kill or die from some other cause. A small tree, however, was grafted even with the ground, and a mound of rich earth made around it during its first season's growth, which is now living, having borne fruit for over 40 years. The fruit has been similar to the original. We do not attribute this success to a complete union, but to the scions throwing out roots above the stock, as dwarfs usually do when planted below the surface. We were told by some of the wise heads that if one could invert a scion and make it grow it would bear seedless fruit. This we did, the abnormal growth disappearing in a few days, but there was no change in the fruit. We have looped scions, inserting both ends in the same stock and had good growth from both insertions, but beyond the novelty of the exploit there is no satisfaction and we would not advise its practice with any other object in view. It is hard to coax nature into a deviation from her beaten course. "Like begets like" is the universal rule, and she has provided in her handiworks for the only departure which she permits and of which man can only be an imitator. From this standpoint we have come to the conclusion that aside from the dissemination and perpetuation of new and choice varieties there is little to be gained from this grafting and budding business, and to this there are many drawbacks and there is undoubtedly a final limit.—*A Subscriber.*

EVERGREEN WINDBREAK.—Since the article in your April number I have been talking with a neighbor who has a fine Norway Spruce windbreak which he planted eleven years ago. The trees were two to three feet high when planted and are now from twenty-three to twenty-six feet high, having made an average growth of two feet each year. These trees cost 15 cents each at a nursery near by, and less than two per cent died from the effects of transplanting. They were planted four feet apart, making the cost 60 cents per rod, which is very trifling compared with the present value of this living fence. A gardener who makes something of a specialty of early vegetables, says he finds them to mature ten to 15 days earlier on the east side of a good Spruce windbreak than those unprotected. There is doubtless money in planting good windbreaks both for gardeners and farmers, in fact everyone who owns a house that could be better protected from cold and wind by a good windbreak. An enterprising man in each neighborhood could get a number of small evergreens and grow them till large enough to plant. What he did not want for his own use, he could likely sell to his neighbors, at a good profit.—*D. N. Long, Erie County, N. Y.*



Cross-section of an Efficient Grapery.

SMALL FRUIT DRYER. Noticing the description of cheap dryers recently I will give one also. A little building according to the variety similar to a hip roof greenhouse but quite low, with drawers to go in at the sides, with a space below to put in a little stove. The glass roof will generate nearly heat enough on clear days, but a fire will help. The drawers must not come too near the stove, over which a plate of sheet iron should be placed a few inches above it. Either wood or coke can be used. If the latter it needs no flue or pipe, as the smoke and gas of stove coal (at least anthracite) does not injure the fruit in the least, but I believe helps to preserve it, and no worms will be found therein. With such a little arrangement six feet square a couple of bushels can be dried every day, and the whole thing not cost five dollars. If some of the manufacturers of evaporators would make a small machine to cost $5 or $10 they would no doubt sell hundreds of them. I myself will resort to my own plan this season, as there is not enough to need a large one, although they have been offered to me free of charge.—*S. Miller.*

Vine Fastener for Wire Trellise.

An extremely simple and easily applied device for holding vines in position is shown in the accompanying illustration. It is cut from sheet metal, making a flat blank having more or less spring, one end being elongated and with a longitudinal slot or opening, and the other end shaped to form flat angular lips.

The method of applying this fastener to a wire is shown on the engraving, the blank being bent to a clip or hook shape at its slotted end and the lips are twisted or bent around the wire to form a closely fitting tube, the vine being introduced between the wire and the tongue of the hook, which thus makes a yielding holder.

By the use of these holders it is claimed that a great deal of labor is saved as compared with the ordinary method of tying the vines by strings while the device is more durable, and, the holder being wide and flat, cannot cut the vines.

Vine Culture Under Glass in Belgium.

In the opinion of Mr. Charles Joly, of Paris, as stated in a recently published pamphlet "Notes on the culture of the Vine under Glass," one of the most important commercial establishments for the culture of Grapes is that of Messrs. Sohie Bros., of Hoeilaert, in Belgium, Hoeilaert being a small village of 2,500 inhabitants, and situated between seven and eight miles south-east of Brussels. Mr. Joly gives some interesting particulars respecting the Messrs. Sohie's establishment, from which we extract the following:

About 1865, the brothers Sohie commenced to construct houses for vine culture, and at that time had the advantage of cheap labor, iron, glass, and coal. The variety at first grown was Black Hamburgh, and the cultivators found a ready market in London, Amsterdam, Brussels, and Paris for their produce. The dealer is supplied with fresh Grapes all the year round, and the produce compares favorably with the famous Grapes grown at Thomery.

The vineries are constructed on the simplest plan, consistent with efficiency, quick and economic production. They are modelled on the same principle as those of the Dutch, and our illustration (copied from Mr. Joly's paper) shows a section of a house that would measure about 9 yards or 10 yards wide, and ½ yards high.

The structure rests upon brick walls about 2 feet in height. In the interior iron wires are supported by stakes, and to these vines planted about 1 yard apart, are fastened. There are four rows of vines in a house—two against the outside walls, and one on each side of the center.

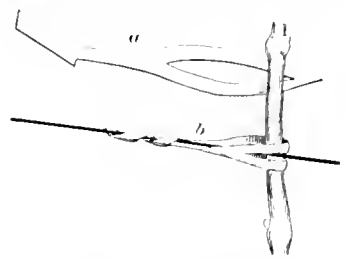
During the first two or three years the vines are grown in pots, and any bunches that may make their appearance, are removed in order to strengthen the canes. The system of heating is the old-fashioned brick-built flue placed in the lowest part of the house. The flues of pottery jointed with clay are placed along on the soil, and are connected with an upright shaft to carry away the smoke. The Messrs. Sohie Bros. have ten hectares under culture, of which six are entirely covered with glass. Besides the Vine, the Peach, Madeleine Rouge, and the Strawberry, Marguerite Lebreton, are cultivated at Hoeilaert, and compensate in a measure for the low price obtained for the Grapes.

The Minnewaski Blackberry.

H. HENDRICKS, ON THE HUDSON.

A successful Blackberry for general field culture north of New York still remains the great desideratum among fruit growers.

Among the newest candidates for the place is the "Minnewaski." This originated with A. J. Caywood, on the Hudson, and fruited for the first time I think in 1883. I saw it on his grounds with a large company of prominent fruit men in



Vine Fastener for Wire Trellise.

1884, and have watched it with some interest since. He says it was produced by fertilizing the pistils of the Kittatinny with pollen from a wild variety which grew in a swale on his farm. Of course everything was claimed for the Minnewaski, right on the start. It was entirely hardy, even at the North Pole, an immense bearer, excellent quality. Well, it certainly made a grand show in 1884, even the lamented Judge Parry, that veteran Blackberry grower, said he had never seen it equaled. All were surprised at the magnificent display of fruit. The canes were fruiting to the tips, not a bud had been killed by the winter apparently. Since then it has borne a heavy crop annually on Mr. Caywood's grounds.

On the 8th of August last year I went to see the crop. I found about 1½ acres in bearing, mostly two-year-old plants, some one year. Such a show of fruit I never saw upon any plant or tree. The rows seemed a perfect bank of fruit on each side, some three feet high. The berries being in all stages of growth and maturity. He says that the first ripe berries were picked June 28th. Daily pickings began about the middle of July. Over 14 bushels had been picked the day before my visit, and about fifty bushels had already been marketed.

The fruit is shipped in quart baskets, 24 or 32 to a crate. The average price obtained for those sold was 11½ cents per quart, the range being from ten to fifteen cents. The Minnewaski sold for 12 cents in Washington market while Kittatinny and some other sorts brought only six cents, according to the dealer's report. The fruit averages large in size. As soon as colored it is fit for market; and Mr. Caywood says it does not turn red after picking.

In flavor this variety is perhaps a shade more acid than is the Wilson, but the quality is excellent, and the berry is coreless when fully ripe. The soil in which the plants are growing is a clay and gravel loam, on a Northwestern slope. The method of training employed is about as follows, viz: The plants are placed in rows eight feet apart, four feet between in the row, young plants being allowed to fill up the row as they grow. Posts are then placed from 40 to 50 feet apart in the row. Then a stout wire is drawn up from the ground under the plants and fastened to the posts about three feet from the ground; one on each side of the row, holding the plants upright between, the two wires being tied together at intervals if necessary. When the fruit begins to ripen, a third wire is drawn tightly at the height of 4½ feet, and secured to the posts. Then all new canes are cut off about six inches above this upper wire. Thus, at three years old—the first full bearing year—the fruiting trellis will be about five feet high, instead of three, as now. Next spring the old and superfluous wood is drawn out with a stout hooked knife at the farther end of a three-foot handle, the bearing canes being left from 12 to 15 inches apart.

The Minnewaski seems a rampant and vigorous grower. One of the great points claimed for it, next to its iron-clad virtues, is that it will succeed well on any good corn or potato ground. My own belief is that the soil can be too rich for the largest product of fruit.

Now I have tried to present what I saw of this new Blackberry without any purpose to exaggerate a new fruit. I am inclined to believe that its the Blackberry which growers at the North have long been looking for.

A Cherry Crop,

SAMUEL MILLER, MONTGOMERY COUNTY, MO.

When a man leaves a place whereon he has 100 bearing Cherry trees, of all the best varieties, and moves to another part of the country where they can hardly be grown, he leaves a very valuable thing behind him. Such was my experience on leaving Pennsylvania twenty years ago and coming to Missouri. I at once commenced to raise trees and set out an orchard of fifty trees. They grew well and had one good crop about ten years ago, but in the meantime not enough for our own use, with the exception of one tree, a Napoleon Bigarreau, which has been giving us a fair crop nearly every year for five years past.

It is not claimed that this variety is any hardier than many of the other imported varieties, but I think the form of the tree is what has made the difference. It branches at a foot from the ground, and spreads out with a round head.

At the ground it is a foot in diameter, spreads twenty-five feet, and is not over sixteen feet high. We have now, June 9th, picked four bushels off it, and there is at least one bushel more on it. It was budded on a Mehaleb stock. Have no trouble with suckers, as is the case when worked on Mazzard stocks. The selection was a large one at first, but now only the following remain and produced in the following order:

Bowman's May. A fair crop, but the birds took all before ripe.

May Duke. A moderate crop.

Rhine Hortense. A splendid crop of as fine as I ever saw.

The same with Carnation.

Napoleon as stated. I can step in the Napoleon tree and nearly walk about in it.

Governor Wood. A medium crop of the best Cherries, in my estimation, that we have.

Old as I am, my intention is to save seeds of all these, work and place in nursery, and when two years old set them out in orchards, without any budding or grafting. I don't see why there may not be some good ones among them. They will be cut back so as to fork near the ground.

Cherry seeds must be kept on the ground slightly covered, or they will not germinate the following spring.

On Utilizing Surplus Vegetable Plants.

A. P. REED, SOUTH BRIGHTON, MAINE.

A very small piece of ground sown to vegetable seed will give plants enough to supply several families. Suppose that at this season we have got of our own raising an abundance of such plants, how can we best proceed to dispose of them for profit? The first impulse is naturally to pull up the surplus plants that come from reasonably thick sowing and throw them away. While this may sometimes be necessary to some extent, yet not always to the extent practiced.

To utilize and make the most of these plants is an important part of gardening, if, indeed, it is not more than half. Yet it is not so much of a task as one might think, seeing that the season for transplanting is quite long comparatively, and that even a small garden has many nooks and corners that had better be closely occupied than be vacant. You cannot tell in one day how many can be used, nor in two. There may also be something growing in the garden that will get out of the way in time to grow a crop of Cabbage, Beets or Turnips, hence it is always best to have numerous reserve plants to use in such places that most always turn up sooner or later. By a course of gradual thinning out also little injury will result, as by pulling out everything in one or two days. Neither need things be injuriously crowded with such judicious thinning. In point of fact such a thinning process has got to be gone through with whether we save anything out of it or not, for superfluous plants are weeds. But what can be utilized as stated will be clear gain.

In transplanting, it is always safe to set deeply, while removing the plants in a good condition and as quickly as possible. Make the earth quite solid and firm about the plants. Good success may be had in this work in a sunny day under these circumstances, if the plants are well watered and shaded immediately after planting.

Preparation of the Soil for Grape-vines.

D. S. MARVIN, JEFFERSON CO., N. Y.

Judging from my own experience I think that the roots of the vine need to penetrate the subsoil. I am aware that of late it has been recommended and practiced to set out vineyards upon a cheap scale without trenching or sub-soiling.

This in my judgment is the chief reason why the vine suffers so much from sporadic diseases. The roots being too near the surface are subjected to all the changes and vicissitudes of climatic conditions, while if set deeper they would receive the protection of a deeper soil against sudden changes.

An experiment that I made a few years ago saves so much of the heavy expense of subsoiling, and has proved so satisfactory, that I can safely recommend it to vineyard planters. It is so simple, and applicable to all varying conditions, that no one need hesitate about adopting it. I simply plowed and cleaned out trenches in the fall as steep as their sides could be made, eight feet apart and 20 inches deep, set the vines in the trenches in the following spring and filled them in again mainly with the plow.

The reason for success in this experiment of fall trenching is found in the action of frost during the winter being enabled to penetrate the subsoil deeper than it could otherwise do through the means of these open trenches, thereby fining and comminuting the soil and subsoil and bringing up to the surface some of the lost fertility of past ages. I found to my great surprise that before the frost had gone out of the ground the trenches were deeper or the ridges were higher in the spring than in the fall, showing that the frost had penetrated from the trenches sideways into the soil of the ridges, heaving and loosening it much deeper and fining it as I had never before observed under any other conditions. I found that I had been utilizing the forces of nature to do my work free and far better than I could do it at great expense myself with teams and subsoil plows.

Subsequently it was shown that as the roots of the vines spread out and grew the feeding roots at the ends gradually rose a little as they approached the centers of the rows, and that occasionally the plow in the subsequent tillage of the vines cut off the end of a few of these feeding roots, but I could not perceive that this was a serious injury, for new and more branching roots were sent out from the severed ones the next season, and I sometimes imagined that it had reinvigorated the vines, and caused them to grow more luxuriantly, but I could not express a positive opinion as to this, without more experience and observation.

Another point gained was, that in the spring I did not have to dig holes to set the vines at a busy season of the year. The holes were already dug just the right depth. The fine top soil had fallen in from the sides of the ditches making the very best possible conditions after strewing a little phosphate, ashes and bone dust in the trench, for the fine subsequent, healthy and vigorous growth obtained, and I found that I could work the soil some two weeks earlier than that entrenched. I actually set the vines while there was yet frost in the ridges, the soil working dry and mellow.

Niagara County Notes.

THE MUNSON FRUIT FARM, LA SALLE, N. Y.

Directly across the creek and highway which skirt one side of "Woodbanks," the newly acquired grounds of this journal, (and which, as explained last month, are to be devoted to experimental purposes in the interests of the journal's readers) lies the successful 46 acre fruit farm of H. D. Munson, Esq., who resides on the farm. Not the entire farm is devoted to fruit, however, for after the failure of the Peach crop in this vicinity some years ago nearly half of it was given over to farm and garden crops. Among the latter, Tomatoes now figure extensively, the product going to the canning factory at LaSalle and to others in the vicinity.

The land of this farm is mainly a light chestnut loam, overlaying a subsoil of blue clay. It is naturally the home of the Chestnut tree; those acquainted with the particular likings of the Peach as to soil will easily understand why here the tree readily thrives. Still at the present time there are but few bearing Peach trees to be seen in this locality, owing to

THE RAVAGES OF THE PEACH YELLOWS

in the past. When that scourge appeared as alluded to it found the Peach orchards hereabouts generally in a condition, owing to the advanced age of many of the trees, the easy methods of culture in vogue and the ignorance of the owners concerning the disease and its treatment, that made them an easy prey to it, and orchard after orchard was swept away. But the planting of new orchards is again being undertaken and with more or less promising results, one plot planted two and three years ago, especially being very satisfactory, and which assures the observer that Peach growing will soon again be flourishing hereabouts.

A peculiarity of this particular Peach orchard is that the trees were worked after the European plan upon Plum stocks, those of a wild species having been employed. While the trees show a fine state of vigor and healthfulness, the single objection may be noted against the Plum stock, that it sends up sprouts from the roots. But the owner believes in absolutely clean culture for the Peach and in this view finds little trouble in dealing with the sprouts,—he treats them as weeds. His trees are planted in quincunx order (illustrated on page 184) at 12 feet apart and the orchard includes the leading standard sorts. The pruning adopted is that of a rather open head while young, and not much besides. From his observation Mr. Munson would now have little fear of the Peach yellows in any orchard of healthy, moderately young trees, by practicing perfectly clean culture and keeping up good soil fertility. In the fight against the yellows at the time of its former worst attack he noticed that notwithstanding the general odds as referred to against success, those orchards in which absolutely clean culture was resorted to were the last to succumb to the foe, and in that fact he thinks lies the important lesson in dealing with this disease.

THE CHERRY

has received some attention on this farm as a market fruit, with the result of deciding against the sweet class and in favor of the acid class as regards profits. Objections to former: loss from curculio, birds, and in wet weather rot, besides uncertain markets with prices so low at times as to hardly pay for picking. Of the latter Mr. Munson has a single line of trees extending along the margins of his nearer home grounds the trees of which rarely fail to yield good returns, in fact "two to one" as compared with the sweet kinds. They are mostly of the Early Richmond variety. Trees of the old Morello are also somewhat numerous, this being a favorite for marketing. In this class he esteems the Montmorency highly, for its heavy crops of fine fruit and the beauty and vigor of the tree.

Referring to the difficulty of grafting the Cherry Mr. Munson,—who makes it a point to work over undesirable varieties in all kinds as soon as the fact is made clear, for something better, lays much stress upon the well-known fact that to be successful the operation must be

performed early in the spring, in fact the earliest of all grafting. The same is also true of Plums. This point observed by getting the grafting done as early as the weather will allow, even though it be at the cost of cold fingers, and not three grafts in a hundred need fail. He much prefers to cut all scions whether of trees or of Grape-vines in December, storing them in the cellar until needed.

PEAR CULTURE

is a leading branch of Mr. Munson's business. The soil here being of heavy sub-soil is well adapted to this fruit. At present his main varieties are Bartlett for standard and Angouleme (Duchesse de) for dwarf, both of which have proved very profitable. In future plantings, however, Bartlett is not to occupy this prominent place, for the proprietor takes the reasonable view that, owing to its being so extensively planted now everywhere both for home use and market, it can be only a matter of time when the markets will be overstocked with this early and rather quick-perishing variety. His tests of others lead him to place the Howell at the head of the list as a substitute for Bartlett. The tree is of free growth, upright habit and an early and profuse bearer. The fruit is rather large, roundish, of a light waxen, yellow color, and often with a finely shaded cheek, and of excellent eating quality. It comes in a little after the Bartlett, and does not so quickly pass out of its best condition for marketing, a serious objection to the former kind, to which may be added another that it is not a favorite for canning purposes. For an early Pear the Tyson is classed among the more desirable sorts. Louise Bonne of Jersey, stands high in some respects, and but for the fact that it is subject to a rust it would be planted here second hardly to no other variety. The Kieffer, although not a variety that Mr. Munson grows at all enthusiastic over, is still not utterly despised as a market fruit, for thus far it has paid, and good profits are a wonderful factor in deciding many of these points. The variety moreover has many friends as a cunning Pear. As regards kinds of

CULTURE FOR PEARS,

both that of thorough tillage and of having the orchard in grass are here shown. Now that there is no serious trouble from black blight, the former is preferred, but at the time blight prevailed so destructively the sod method stood the owner to good purpose, for here but little of the disease was present as compared with those plots where clean culture was practiced, and which soon were marked by numerous dead trees. But the sod treatment, which is still kept up in one fine orchard, it must be noted, is far from being merely Pear trees in a grass meadow. The trees have an annual mulch of manure applied over the roots for a distance of three feet on all sides of the collar. Then the grass which is mown every year is not taken away, but is allowed to settle down and decay, thus yielding plant food to the soil. All this involves considerably less work than where a similar area is well cultivated, but it must not be overlooked that by the latter system there is a compensating gain in the growing of Strawberries and other hoed crops under the trees. Such double cropping of the land is considered no detriment to the trees provided ample returns of manure and good tillage are applied.

In pruning Pear trees as in the pruning of most other fruit trees, Mr. Manson aims at securing a well-balanced head, the branches well up from the ground, to admit of a free circulation of air and light underneath, and a rather open head for admitting sun and light throughout the tree. The dwarfs he does not favor keeping very dwarf, but likes to encourage the early formation of a tree 14 to 16 feet in height, and then keeping it not far from this size. In carrying out this idea, he does but little pruning beyond providing for a good distribution of permanent branches, and for general shape, until the tree has reached a dozen or more feet in height. By that time it has gotten to be rather bushy and then pruning is more earnestly begun, through letting an increase of light into the top by cutting out brush, and heading back the outer branches. In seasons when the fruit is thickly set over the trees the owner thins freely, having found that the less fruit on a tree down to a certain quantity the larger and finer the product and the bigger the profits per tree. It may be added that the fruit from these orchards as a result of the care taken in growing, handling and packing has established a reputation in a number of distant cities like Cincinnati, St. Louis, Buffalo and Toronto, and buyers come to the farm and eagerly take the crop every year at good figures. When Pears net $3.00 per barrel one year with another they are considered a very paying crop.

Apples and Quinces, especially the former, are grown in large quantities here. In Quinces the main reliance is the Apple or Orange variety, and this yields almost uniformly a profitable crop, the fruit finding a market in the cities named.

IN APPLES

the Rhode Island Greening is placed first for profit, while Baldwin occupies second place. In former years the Northern Spy headed the list as a profitable variety, but now takes a place lower down. The trees of this variety bear less than formerly, and the fruit seems to have deteriorated in quality also. Where formerly it kept well for marketing far into the spring months, in recent years rot has set in quite early in winter. In the opinion of the writer, if the trees, which have by no means been neglected in their culture, had received yet higher cultivation and a somewhat increased thinning out of the top the product would have been less open to the faults named. It is our experience that the Spy requires more attention to these particulars than most sorts. With good culture and air and sun freely admitted throughout its head, it usually continues a great bearer for many years.

In the line of

SMALL FRUITS,

Strawberries, Raspberries and Grapes are the main crops here grown. A few years ago some six or eight acres were kept in Strawberries and these by the high and careful culture here given proved very profitable. But more recently the growing of this fruit has so generally extended throughout this vicinity as to render it exceedingly difficult to procure the help for properly picking and handling the fruit. The truth is many of Mr. Munson's former pickers, thrifty German neighbors, and owners of land, that they are, when they saw the money in the crop, took advantage of the knowledge, picked up at the business and turned growers themselves. The result was that Mr. Munson as well as some other large growers were lead to lessen their areas of it. At present the former has less than three acres of Strawberries.

The giving of new varieties of Strawberries a trial as they come out receives some attention here, and yet as is commonly the case with growers in this part of the country, when Mr. Munson sets out his new plot annually, the old Wilson variety is called upon to cover nineteen-twentieths of the area planted. At this date (June 12) there are fair-sized bearing plots of Jewell, Jessie, Cumberland and Manchester to be seen in close proximity to the larger beds of Wilsons, yet for general good appearance the latter makes the best rows. A single point—and it is a strong one always—in favor of the Wilson clearly shown here where excellent culture prevails for all, is the many strong erect leaf stalks surmounted by very large leaves, of a deep-green color, and which exceed any of its neighbors. One may be sure that when the fruit is as freely set as here on the varieties named, if one excels in having larger, stronger and healthier-looking foliage than the others, that variety is the superior one, so far as the extent of the product is concerned. The method of planting practiced here is to have the rows four feet apart with the plants set at fifteen inches apart in these.

Raspberry culture receives about equal attention with Strawberries. The crop is found to be a paying one, the fruit being disposed of at the near markets of Niagara Falls and Suspension Bridge, and some at Buffalo. The Clark is placed among the first in point of desirability; then follows Cuthbert, and after that Saunders, of which half an acre is being grown. The Gregg is also considered one of the best, and next to it is the Ohio or the Doolittle.

The area devoted to vineyard is not large, perhaps not above three-fourths of an acre, but it is of sufficient size to afford the owner and his family much satisfaction. And in it are grown most of the popular varieties, with some of the newer ones. Among the latter

NIAGARA, BRIGHTON AND WORDEN

are held in high esteem. Favorite as the Niagara is, however, Mr. Munson has never been carried away with the idea that to plant it extensively for marketing would be profitable. This is mainly because of its color being against it, he being of the opinion that the sale of light as compared with dark Grapes, must always be limited. "When you are choosing a color for fruit," remarked Mr. Munson, "follow nature and you will make no mistake."

This vineyard is planted at 8 by 8 feet apart for the vines. The trellise consists of four bars of wood supported by posts. But such a trellise would not be built again by the owner, for he sees merit in a trellise consisting of one inch gas pipes for posts, driving these into the ground and supporting the three wires, which for an ordinary trellise are enough. Mr. Munson is not certain but that some system of high trellising, which would bring the vines further up from the ground and giving each more space also, would be a great improvement on the present system and may yet be adopted. It would be following the natural style of Grape-vine growth. He pointed to an end vine of a row of Concords, and which had been allowed on one side to clamber over a Cherry tree, reaching a height of perhaps ten feet, and this part of the vine always bore abundantly, and if anything more satisfactory than the trellised vines. Varieties that are subject to mildew on trellises are sure to be free of the disease if allowed to run to some height over trees. Referring to the summer pruning of vines this is followed up closely. He lays special emphasis on pinching bearing canes at the third joint beyond the fruit cluster, for in this way the strength goes into the fruit, instead of inciting new wood growth as in the case when more young wood is left.

One feature of Mr. Munson's place worthy of special mention is

THE NURSERY OR RESERVE PLAT.

Here he has grown from seeds or small stocks a large proportion of all the trees of his orchards, with obvious advantage in most cases. He believes in the free use of wind-breaks, and the planting stock both in deciduous and evergreen kinds, which has been used for setting out numerous lines of these has first been brought along for some years in the nursery. The marked advantage of such a nursery is seen especially in the case of evergreens, which can be (as they are on this place) transplanted into the nursery with little loss when they are quite small, and then after being fit for permanent planting they can be moved that short distance necessary without shaking the earth from the roots, a point not to be underrated. It may be added that the wind-break along the north line of this farm consists of a double row of Norway Spruce, the rows three feet apart with the trees at eight feet from each other in the rows, and alternating.

A man of Mr. Munson's experience cannot but give some valuable ideas on the subjects of

MANURING AND TILLAGE.

While he has no prejudice against commercial fertilizers, yet he has never employed them. This is because by his methods he has been able to procure all the stable manure needed for bringing his land from a run-down state up to one of high fertility. The manure has been mainly procured from the livery stables at Niagara Falls five miles away. Here he has procured an immense quantity of manure, it being as he estimates the yield of an average of 40 animals and extending over a period of fifteen years. Much of this manure has been secured by trade, he buying straw in the neighborhood and furnishing this as bedding to the stables for the manure. He considers that the manure has cost him on an average $1.50 per two-horse load.

The land here is kept thoroughly sub-soiled by the frequent use of the sub-soil plow. What is called thorough sub-soiling is not simply to follow once in the wake of the common plow with a subsoil plow, but to do so a second time also. The first time the plow penetrates to about 16 inches in depth, and the second something like four inches more. The results in his estimation always well warrant such a course, and he cited numerous instances in its support.

Asked to give the sum and substance of his conclusions concerning profitable fruit and vegetable culture, Mr. Munson did it to this effect: work with less trees and area, and give such superior attention as will invariably secure the best, even "fancy" prices.

In conclusion it may be said that Mr. Munson, like all ardent lovers of horticulture, has a great fondness for ornamental trees, plants, and vines. His home grounds which receive the constant close oversight of his estimable wife, contain a fine collection of trees, shrubs, and hardy and tender flowering plants,—one might travel a great ways before meeting such another. Not the least charm of the estate is the lines of mag-

nificent young shade trees in numerous varieties, which on two sides adorn the highway. The trees were all planted by the present owner within the past sixteen years and have reached a height of from twenty to thirty feet, so that now they afford considerable shade.

The Staking of Orchard Trees; Tying with Willows.

A ride through many rural sections will bring into view numerous fruit trees both in orchards and standing singly that are in an unsatisfactory state. Not one in twenty are properly staked, and the consequence is a number of trees with very crooked stems, and which will not greatly improve as they gain in strength.

To keep all young trees carefully staked leads to the formation of clean straight stems, these in their turn being conducive to the growth of large healthy fruitful heads. One stout stake ought to be placed to each tree directly they are planted; this in addition to keeping the stems straight, also prevents the wind waving them with consequent injury to the roots.

For securing the tree to the stake no tying material is more easily obtained or applied than Osier Willow twigs, that is, assuming that some bushes of this Willow are growing in the vicinity, as they should be on every farm or garden, for supplying cheap tying material.

In the illustrations annexed, Figure 1 shows a young, newly-planted tree well secured by two ties of Willow to a firm, deeply driven stake. By this course the tree is kept in an erect position, and the strain caused by the wind bears on the stake instead of injuriously on the root. Figure 2 shows the more ordinary way of applying the Willow twig. Figure 3 an improved form for accomplishing the same end.

Forcing Rhubarb.

WM. H. YEOMANS, TOLLAND CO., CONN.

In reading Peter Henderson's valuable article in the May number on this subject, the thought occurred that the market gardener who undertakes to meet the demand of city customers is compelled to employ facilities that many ordinary growers of home vegetables would not think of indulging in, and so while it can hardly be expected that as early returns can be secured, means may be employed whereby a growth may be considerably hastened.

In the first place no farmer's family should be without this early and healthy

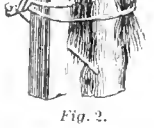


Fig. 2.

Fig. 3.

Securing the Tree with Osier Willow Twigs.

vegetable, which is not only palatable and useful in the culinary art, but possessed of health-giving qualities. It is a gross feeder and therefore requires an extremely rich soil to develop large and crisp leaf stalks. It can be started from seed, but in that case requires a little time for such root development as is necessary to the growth of vigorous leaf stalks; for that reason it is better to commence by setting mature roots that may be obtained of neighbors or at all well established nurseries of small fruits, etc.

Prepare for the setting by making a large excavation at the south side of a wall, fence or building, which is to be filled with manure suitably incorporated with the better portion of the soil removed. Set the roots so that the crowns will be just below the natural surface. If the soil is moist, so much the better. But little must be expected the first year, as it will require a little time for the plant to get established. In the fall cover well with coarse manure and so thoroughly as to protect largely against frost. The greater the protection against frost, the more sure an early crop. In the

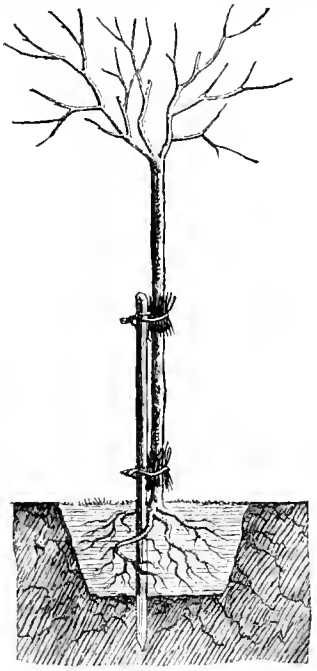


Fig. 1. Young Tree Securely Staked.

spring, as soon as all danger from severe freezing is past, remove the greater portion of the mulching from over the crowns and place a shallow box having neither top nor bottom, over each plant, upon which place a glass window; this will have a tendency to hasten the development of the leaf buds, which will soon show themselves; when these appear place a headless barrel over the hills, placing the window on the top. In this way the stalks will develop with greater rapidity, and being grown in the dark will be more crisp, tender and larger than if grown uncovered. Any one that once partakes of the delicious dish, in the shape of pies, tarts, sauce, etc., afforded by the Rhubarb plant, will hardly think of getting along without it, and will give such attention as the plant requires.

A Convenient Land-measuring Implement.

After coming into possession of our present grounds, one of the first things we felt the need of was a simple land-measuring device. The one hit upon is illustrated herewith, the idea of which we think originally was given in the New England Farmer. At any rate it is a most efficient tool and so simple that any one can easily construct one after the pattern.

The measuring length of the device is ten feet. The main horizontal piece is one-half a foot longer than this and consists of a light five inch wide piece of $\frac{7}{8}$ inch pine to which are attached the markers and the handle. The markers are two feet in length and are nicely pointed at the lower end, each of the ends being armed with a nail. In nailing these to the main piece great pains were taken to have the points of the two exactly ten feet apart, and square with the 0 and 10 marks on the horizontal piece. The handle nailed at 5 is the upper part of a broken shovel handle.

In using this measure, we start with the 0 end of the marker at the end of the line to be measured. The other marker then comes to the ground at 10 feet along the line, and is kept to its place while the measure is turned or swung ahead on this to have the 0 end reach to 20 feet ahead and so on, swinging the measure ahead alternately on the markers and keeping up the count, 10ft., 20ft., 30ft., etc., until any given line is measured. The measuring thus can be done about as fast as a man can walk, and more accurately than two persons can do with an ordinary tape line, the greatest objection to which latter is that it stretches.

Among the Strawberries.

WM. F. BASSETT, ATLANTIC CO., N. J.

The supply of Strawberries for this season has at no time been in excess of the demand and consequently good berries have sold at remunerative prices, and the difference between the best and those of indifferent quality has been unusually marked and decided, the range of wholesale rates having been from four to fifteen cents per quart by the 32 quart crate. This not only points to larger profits on well-grown berries, but also suggests the question whether it is not upon the whole more profitable to cultivate varieties which produce large and fine berries, even with one-half the quarts obtained for ordinary kinds. For instance, if May King, Wilson and Crescent each yield 2,000 quarts of good berries per acre, the first bringing one or two cents a quart more for its superior appearance and finer quality, and this is all we get from it, while we get another 2,000 from either of the others, which last only bring 4 cents per quart; this just about pays cost of picking and marketing, and would it not pay better to follow with a later variety coming in full size?

Among the varieties which I grow, *Crystal City* gives me most satisfaction as an early variety. In size it is only medium or rather large in wet seasons, and not very productive, but it is a week earlier than any productive sort, and of the best quality, and although it costs me double to grow a quart than Wilson or Crescent would cost, I do not grudge it. Healthy and a great runner.

May King has been grown rather largely here for two seasons and the general verdict of last year was only one-third as productive as Crescent. This season, however, they are giving rather general satisfaction.

Indiana is a strong growing variety of average productiveness, berries a pleasing light red color, good size and very sweet; rather late. One of the best table berries.

Vineland Seedling in some respects resembles the Kentucky; it has the same tall

Simple Land-measuring Device.

leafstalks and the berries thrown well up. But the berries are a little more rounded in form, a little larger, and I think it produces more and holds out even later. I picked some berries from it last year July 4th, six weeks after the first Crystal City. It is somewhat acid unless fully ripe.

Jessie. I have fruited this for the first time this season and it did not have as good treatment as it should have had, but it shows some good points. The berries are large and very firm without being disagreeably hard, as some firm berries are. In quality it has few equals and I regard it remarkably promising both for market and home use. The color is a little too dark for the best appearance, but if the foliage is kept good by a little nitrate of soda so as to keep the fruit shaded it will look brighter.

Belmont. This very noted Massachusetts berry has been planted rather largely here

by a few growers. It does not give promise of great yields and the berries are very dark and the quality superb. As a general market berry I do not think it will pay, but when one has a regular set of customers who buy by representation and not by looks, and who are willing to pay for a good thing, this should suit, and it cannot be excelled for home use.

Jewell has not been satisfactory with me. I have fruited it two seasons, and although it has given a few very large and fine looking berries, the greater portion are small, often very knotty, quality poor, and there has been quite a tendency to decay on the vines before fully ripe.

Cubangie. Fruited this season for the first time, and the earliest berries were quite large but extremely hard and knotty, and the later ones small.

Corel's Early is possibly a day earlier than Crystal City and appears to produce more berries in number, but smaller, hard to divest of the hull and poorer in quality.

Acme was received from Baltimore as a very valuable extra early variety. In foliage and fruit it does not materially differ from Crystal City; they are identical.

Summit and Norman are both large and showy berries, which I have fruited this season and do not find them worth growing here, as the foliage rusts very badly.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

One of the best fields we have for small fruits is a cobble-stone piece.

Plant Sweet Corn now and you will have the luxury on your table this fall.

After Raspberries have borne two or three crops, it does pay to throw a shovelful of manure around them.

Green Sawdust. Don't put it onto plants or land. Throw it in barnyard, or mix it with the course manure, and throw the whole over a few times before using.

Deep versus Shallow Culture. If Strawberry beds have been deeply cultivated previous up to freezing time, then deep culture in the spring up to blossoming season is beneficial, for if cultivated deep the roots have run deep, but if, as is generally the case, cultivation ceases in August or September, the surface ground will be filled with fine roots, and these, if ground is cultivated deeply, will be broken off and crop proportionately damaged.

Changing Bearing Year. The idea that trees can be permanently changed so that half will bear one year and half the next is all bosh. So long as late spring frosts hold off it may be done, but as soon as one of these cuts the blossoms or fruit of the trees bearing that year, don't you see they will bear the next season, or at the same time the others are to bear. This too accounts for trees set at different ages soon all yielding their fruit the same season. A frost comes and evens them up.

How rich must it be. If the land will grow a fair crop of Potatoes or Corn it is not necessary to put on any fertilizers to secure a good crop of Strawberries from the plants next season, as the compost or phosphate can be put on late in the fall or the next spring—in fact we would prefer to get the land in good tilth, set the plants and give them good cultivation, and as time can be had after they are set and before winter sets in, scatter a little phosphate around each plant, and in the fall put what fine manure you can get around them. If land is very poor, plow furrows where plants are to come and scatter in bottom of these furrows the phosphate, say a pint or a quart to a rod, and over this set the plants.

Thin out the Grapes. Say every alternate bunch where they are thickly set, on a branch or one vine, and see the difference in the size of the bunches that are left on this fall when they ripen than those on vines and branches not trimmed, and too take a pair of fine pointed scissors and thin out the fruit on bunches, and see the difference in size of fruit on the bunch this fall. If you want a few bunches of grapes for some extra occasion, or to surprise your friends, or to lay on the show table at your County or State fair, try this practice of thinning out. Grapes grown thus will sell for a good price, when ordinary Grapes will "go begging" for customers.

Transplanting large Pines. Pine trees 6 inches diameter at the base and 25 feet high can be moved if sufficient root be taken out, and to do this cut back the tree some both at top and ends of branches, and in August or September dig a trench around the trees, say four or five feet from body, and digging below the roots, cutting them off. Leave the trees until the ground is thoroughly frozen in mid-winter, (having however, holes dug for their reception before winter sets in) and then dig under and raise them out with levers onto stone boats and transplant, packing ground solidly around them.

DON'T SPREAD OVER TOO MUCH GROUND.

The trouble with many new beginners is, they try to do too much and cultivate too much ground at first.

We know of many small fruit growers who have five to ten acres of ground in small fruits that are actually making more money than others who have twice to three times the amount of ground.

First. Because the right sorts are most largely planted and depended upon. Second. Plants are set in good season and closely together, and thus form perfect rows. Third. The ground is well prepared, being deeply ploughed, and a subsoil plow, that does not turn the subsoil to the surface, but that stirs it up to a depth of 20 inches, used, and if water lays near the surface, the ground well underdrained.

It is a fact worth considering, that rows which are not well filled with plants require more work to keep the weeds down than those rows well and perfectly filled with plants. And in rows that are well filled up, the surface is kept moist by being shaded by the foliage. It is far better to grow an acre of Strawberries and obtain 200 bushels of fruit than two acres for the same amount. "Yes; but how am I to get 200 bushels from one acre," you ask. Easy enough. We will suppose your ground good Corn or Potato land, and in good, tillable condition. Plough it this fall, following the plow with a subsoiler that will loosen down at least 18 to 20 inches. Scatter over the acre eight to ten good two-horse wagon loads of well rotted manure this fall. Plough again in the spring and put on the surface as many more loads of manure, and plant it out in rows 4 feet apart and plants 10 to 12 inches apart in the row, with Crescents, Windsor Chiefs, and Wilsons, in alternate beds of 4 to 6 rows of each. Keep well cultivated and the ground stirred up as deep as possible, causing roots to run deep, and you may rest assured that you will get from 200 to 300 bushels to the acre, especially if just before ripening the rows are well mulched with straw or hay.

The same ploughing and manuring and setting close of black or red Raspberries, and kept well cut back so as to form a perfect hedge, and you are certain of 100 to 150 bushels, while as a rule over the country 40 to 50 bushels is the ordinary yield.

HOEING STRAWBERRIES.

It hardly seems necessary to go over the Strawberries again so soon, but we have had dear bought lessons in the past, one of which is to put off hoeing so long as weeds are not "getting the start of plants." We have now reversed it and mean to give plants start of the weeds, and it is then easy to keep them ahead. The fruit crop is soon coming on and our attention will be taken up with that, and if those Strawberries are all run over now no weeds will start for weeks.

We have discarded the plan of allowing Red Raspberries and Blackberries to sucker and grow all over and between the rows, and now keep the cultivator running through them every two weeks, cutting off all suckers that come up between the rows and giving plants in rows double the chance.

GARDENING ON OUR HOUSE TOPS.

Every family that loves Strawberries can raise their own, if they will but give a little time to the culture of this luxury.

Many an Apple box that is so readily converted into fire wood can be filled with the rich scrapings of the street, and first boring a few holes in the bottom of the box for draining, they can plant six good plants in each box, filling the box two-thirds full of earth and then carefully planting the vines, spreading the roots of each vine star like, so as to allow them to bed upon the soil.

One dozen boxes of this kind upon the roof or balcony of a house would give a luxurious dish often to a family, and from the new kinds of Strawberries with proper care we believe every person can raise specimens of this fruit which would astonish every grower. The new kinds now offered are said to produce fruit from 8 to 12 inches in circumference. Those that feel interested in this system of culture, if they will call at the Farmer office we will lead them to a very successful experiment of this plan, where this fruit is now in bloom, giving great promises of paying well for all care and trouble.—California Farmer.

We remember being invited to the house top of a boarding house in New York City to "look at the flowers," and there around on the roof were scores of boxes and pots filled with flowers, Radishes, Lettuce, etc.

How many of our city readers might have fresh fragrant Strawberries and other dainties with but little care or trouble.

But, says some, "the rain water would be filled with dirt." No, not if properly grown, that is, by setting the pots or boxes holding the plants in pans or boxes that are water tight.

Fifty plants of Strawberries would give a family of four to five persons a nice dish daily for two weeks. Fifty pots of annuals like Petunias, Balsams, etc., would make a show that would be beautiful and well repay all trouble. Try it readers.

MANURING STRAWBERRIES IN SUMMER.

J. J. K., South River, N. J., writes: I set out some plants this spring (Strawberries, Blackberries and Raspberries). I did not manure them, but they are growing nicely. I have read that manure can be applied in July or August. I have some fine barnyard manure, please tell me how to apply it.

Very much depends on the amount of land to go over and the condition of the land, and the amount of manure you have. If you have it so that you can put on at the rate of four or five wagon loads to the acre we would advise scattering it along in the Strawberry rows at once freely, and following with a fork potato hoe and working up the soil, and the manure into the soil, as much as possible. If scarce, a very good plan is to dig a hole down alongside of each plant with a trowel, and drop in a handful and cover it over.

As to Blackberries, if the plants have a good healthy appearance and growing nicely we would not give them any manure, as it has a tendency to force them into a late fall growth, so that they are easily winter-killed. If, however, they have a "sickly" look and grow slow a quart of well-rotted manure scattered around each hill and worked in the soil will start them up. As a rule we advise against manuring Blackberries, especially the first two or three years. Raspberries, if set last spring may be manured by throwing a quart of the compost around each hill and working it into the soil.

Cactuses:—To Graft and Otherwise Propagate Them.

Among plants that succeed well under the conditions found in the average home, none are more worthy of attention and more satisfactory than the Cactuses. This family is so extensive and varied that those who have heretofore contented themselves with the culture of but a few ordinary species, can hardly form an idea of the field open in this line to the enthusiast who would make the most of his opportunities. It has remained for A. Blanc & Co., of Philadelphia, to afford great assistance to cultivators in this respect, by gathering up an immense collection of fine Cactuses and selling them at popular prices. This firm has done more. It has published a handsome catalogue and work entitled "Hints on Cacti," which is exclusively devoted to descriptions, illustrations and cultural directions concerning this interesting family and which will be of great value in yet further popularizing the culture of these unique plants.

Fig. 1.

No one branch of the art of Cactus culture is more interesting than that of propagation and grafting the various species. On this account we have seen fit to present the following matter with illustrations bearing upon this point, and for which we are in part indebted to the firm above referred to and to their catalogue.

The principal object of grafting in this family is to place delicate species upon stocks of a stronger character, so that there is less danger of the former suffering from superfluous moisture in the soil, as with some Mamillarias, or to elevate pendulous or drooping plants upon a stem, so that they can be seen to better advantage, as in the case of the Epiphyllums. Some of the slender sorts, such as the Tuberous Cactus (*Cereus tuberosus*) and the Whip Cord or Rat-tail Cactus (*C. flagelliformis*), seem to be benefited by being grafted on stronger stocks both in their growth and floriferousness, but the latter character is usually not much affected.

The operation is generally performed in early summer when growth is proceeding, and the methods employed are extremely simple. The stock selected is usually a Cereus, such as *C. tortuosus*, *C. Macrogonus*, or *C. Peruvianus*, or still better, the stately erect growing Torch Cactus, (*C. Colubrinus*)

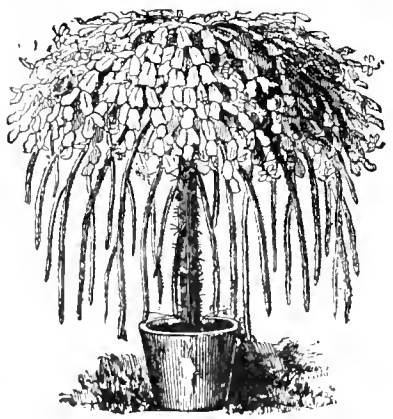


Fig. 2. Epiphyllum grafted on Cereus Colubrinus.

and the Night Blooming Cereus) *C. grandiflora*), or the *Peiraskia aculeata*; but this is principally reserved for the Epiphyllums. When the scion and stock are slender, and if nearly equal in size, they may be grafted by cutting the former at the base into a wedge shape, or better yet splitting it (Fig. 1) with a corresponding notch in the latter, tying them carefully around in this case

If one of the small globular Mamillarias, Echinocactus, Echinocereus, or Echinopsis is to be the scion, the base should be cut smoothly across, and if the stock is a sufficiently broad stem this can be similarly smoothed and the scion placed level upon it, being secured in its place by a string passed over the plant and under the pot, so as to keep the cut surface in close contact. No binding is required round the junction of the stock and scion, and if the plants are placed in a rather shady position for a few days and kept dry, a union soon occurs.

Nearly all the species in the different genera of the Cactus order unite readily with each other, but it is not well to select a plant for a stock which differs greatly in quickness of growth from the scion or *vice-versa*, for the success of the union is very uncertain in such cases.

The Rat-tail Cactus (*C. flagelliformis*) and the Crab Cactuses (*Epiphyllums*) look very beautiful when grafted on stems of *C. Colubrinus* about two feet high, as shown in Figures 2 and 3. Any one can take a young cutting of either of these, and by grafting them produce in a couple of years specimens as fine as those shown here. Echinocereus Pectinatus and Cæspitosus are very easily grafted on stems of Cereus grandiflora, Nycticalus or Macdonaldi; the sap of all of these being very gummy, unites readily.

A Night Blooming Cereus with several branches may have different Cacti grafted on each one, and form a very curious object. Grafted plants will grow twice or three times as fast as those on their own roots, and therefore soon make valuable specimens. Figure 4 shows a Night Blooming Cereus stock grafted with the charming blooms of Echinocereus Pectinatus and forming a handsome and unique object.

PROPAGATION FROM SEED. There is a great deal of pleasure derived in growing Cactuses from seed, even if they are of slow growth. One becomes attached to a plant raised by one's own hands, much more so than if bought.

The seed may be sowed in flat pans or flower-pot saucers filled with coarse sand, which should be kept at all times moderately moist and covered with a piece of glass or a hand-glass. The best way yet is to place the pan or saucer in which the seeds are planted into one of larger size, which can be kept full of water and will keep the sand in the smaller saucer to the required moisture. After the young plants are sufficiently large, they may be potted in quite small pots.

HYBRIDIZING. Nearly all Cactaceous plants produce abundance of pollen, and are readily crossed, especially Cerei, Phyllocacti, and Epiphyllums, to which the efforts of hybridizers have been principally confined. By judicious crossing some handsome forms have been raised, and there is undoubtedly plenty of room for further experiments in this direction. For instance, the Mamillarias vary considerably from seed, yet very little has been done in this genus on any systematic plan. In the majority of species the pollen and stigmas are mature at the same time, and therefore it self-fertilization is not desired the stamens of the flower selected for the seed-parent must be removed before the anthers burst; and if there are other flowers open at the same time a small piece of gauze or muslin may be tied over it both before and after the pollen is applied. The species of Cereus hybridize readily, and it is only necessary to observe closely the time when the flowers open, as some last but a few hours, often opening at night.

Montbretias.

MRS. M. D. WELCOME, YARMOUTH, MAINE.

Five years ago I received my first one or two bulbs of Montbretia crocosmiaeflora, a hybrid by crossing M. Pottsi with M. aurea. It was then a novelty priced at $1.00. My plant thrived wonderfully, throwing up several spikes with lateral stems on which were borne from forty to fifty orange-colored, lily-shaped flowers. In the fall I took up the roots and put them in the cellar. The long, slender foliage died. In the spring there

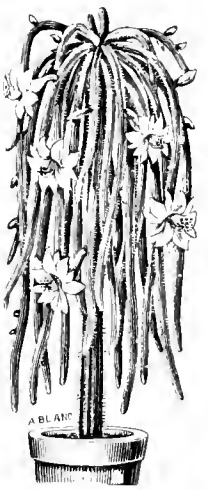


Fig 3. Whip Cord or Rat-tail Cactus, grafted on Cereus Colubrinus.

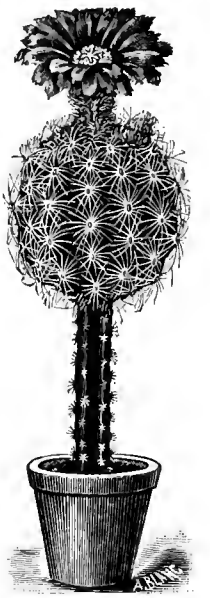


Fig. 4. Echinocereus Pectinatus grafted on C. grandiflorus.

were fifty plants from the one or two received, so rapidly had they multiplied. They have gone on multiplying at the same ratio, so that they have been divided and subdivided into large clumps, while hundreds have been given away. They are of the easiest cultivation, and bloom all summer and early autumn. A bulb now can be purchased for a dime.

Of Montbretias there are several varieties, and last year three novelties were introduced. Bouquet Parfait, large, silvery yellow flowers, upper sepals bright vermilion. Etoile de Feu, exterior of tube red, interior vermilion with yellow center tinted with scarlet. Gerbe, dwarf, fine golden yellow. Pyramidalis, an older variety but quite rare, is apricot shaded with salmon. We can heartily commend Montbretias for bedding-out purposes.

Wild and Other Flowers of Northern Michigan.

MRS. FRANCES BELDEN, OGEMAW COUNTY, MICH.

Perhaps something about the many beautiful wild flowers, Ferns and Mosses, growing about here would be of interest in these columns, and first let me say that it is very cold here in the winter, sometimes 30 below zero, and snow covers the ground four of the twelve months of the year: a great protection to plants.

The first flowers of spring are the little Anemones, Violets, blue, yellow and creamy white, Wake Robins, (*Trillium grandiflorium*), white and pink, Dog's-tooth Violets, and the sweetest of all wild flowers, the Trailing Arbutus, with its clusters of waxy, star-like flowers, pink at first but changing to white, and so fragrant that a small spray of flowers will perfume a whole room. This is so wild a little beauty, indeed, that it refuses to be tamed, so we must be content to hunt for it in its home in the woods among the Ferns and Mosses. Next comes Jack-in-the-Pulpit, Solomon's Seal, Patridge Berry, a wild species of the Calla, Lady Slippers, and many others. I am glad to see that roots of Solomon's Seal, Jack-in-the-Pulpit, Dogs-tooth Violet, and other early spring flowers are not for sale, and why not? They are prettier than some of

our cultivated flowers and in older parts of this and other States are now quite rare.

The flower of the Partridge vine is one of the daintiest of white flowers, looking like wax and velvet, and its pretty waxy twin berries are lovely in the fall. The Virgin's Bower Clematis, another of our wild flowers, is a grand sight to see in its wild beauty, climbing over low bushes and trees, and covered with pretty white flowers in June, with feathery pods later which almost hide the foliage. My little boy told me one day that he had found a feather tree, referring to a perfect bower of this vine, some sixty feet in length.

We find the hardy Annuals the best here for our yards, as there are early and late frosts and the nights, even in midsummer, always cool. Pansies have only to be sown once to always have them, as they do not winter-kill, and the cool nights help them in summer. Phlox Drummondi begin to bloom when they are only three inches high and continue until the snow falls.

There are several wild varieties of Phlox here, and the White Dicentra, advertised by some florists, is also found in our woods. Among our lovely Ferns I may name the Maiden Hair Fern, which with some others, I always have in my windows in winter. Lycopodiums are very abundant here in two kinds: the Running Pine and Bouquet Green. These are gathered by Indians and shipped east and elsewhere for use by florists. The prettiest Ferns and silk Mosses, of which large quantities are shipped every year for florists' use, are to be had freely here.

A word about hot-bed covers. Last year we tried parchment paper for covers and found it better than glass. I hope others will try it this season. I am sure it will give good satisfaction.

The Sweet-Scented Tobacco Nicotiana Affinis.

The common Tobacco, a plant not devoid of ornamental qualities, has numerous near relatives that are well deserving of attention from growers for their fine flowers. Among these the species named at the head and illustrated herewith is one of the most attractive. It is classed in most lists as a half-hardy annual herb, but it is really a perennial plant under favorable conditions, in this respect resembling the Castor Oil Bean, which is a garden plant at the north, and grown as an annual; but in the tropics it is perennial, becoming a tree in time.

The flowers of this species are pure white star-shaped and deliciously sweet. By sowing the seed, which may be procured of leading seedsmen, in heat, in February, the plants may be brought along to bloom the same season out-of-doors and continuing until November. The culture in general is as simple as that of the common Tobacco.

A peculiarity of this Nicotiana is that the blooms close during the day, that is to say from about 10 o'clock A. M. to 5 P. M., and this has procured for it the name of Night-scented Tobacco in some sections, the delicious fragrance being also not perceptible during the lightest part of the day. It is towards evening that the fragrance is so pronounced, and then in the balmy summer eve a plant standing on the window-sill will fill the room with its powerful but not sickly perfume.

Nicotiana affinis is so nearly hardy as to render much confinement fatal to its welfare. It merely demands the shelter of a cool room in winter, with abundance of light and air when growing.

The only formidable enemy of this plant is damp, which is apt to seize the plants at the collar, so that in midwinter they are apt to die off suddenly from this cause. The remedy for this is very careful watering, allowing the soil to quite dry out, and then giving only just enough to moisten it through. In very damp or cold weather the soil may remain dry for fully a week without causing injury to the roots—that is, if kept in a quiet, cool place, where perfect rest is imposed upon the functions.

In the summer, when the plant is growing freely, water should be given abundantly, especially when the pots get full of roots, and give a little weak liquid manure twice

PLANT OF THE NICOTIANA AFFINIS.

a week. After the summer season of bloom, by cutting down the flower shoots and treating the plant as a cool greenhouse plant it may be brought around in shape for flowering the next year.

We have stated that this Nicotiana closes in the lighter part of the day, but this is the case only on condition after all, for it has been ascertained that when it is used as a decorative plant in the house, in situations where the sun does not reach it at mid-day, the flowers will remain open in some degree throughout the day, and throwing off enough fragrance to indicate their presence.

A Spring Day in My Green House.

VERBENA.

I spent the whole forenoon with the plants, picking brown leaves, washing those infested with mealy bug with Fir Oil diluted in water, and plunging those having aphis in weak Tobacco water, and later giving all a thorough drenching in luke-warm water. After all else, with my little bellows, I blew insect powder all over to kill the small black flies that appear every season. Two hours later (the Conservatory had been kept close in meantime) I opened the door, and how clean and lovely the plants and flowers did look. By carrying out the above programme faithfully once in three weeks I have plenty of flowers all through our Minnesota winter.

But I want to speak of some easily managed plants in my collection that I seldom see owned by amateurs, and different from what is seen in every window.

One of these is a Euphorbia jacquinitlora. This is a good winter bloomer, commencing to bloom with me the first of December, and then the first blossoms remain perfect for two months at least; a small, but very showy flower, bright orange-scarlet in color, borne along the stems of the plant. I have Torreia Fournieri, Salvia splendens, which is now and has been since Oct. 1st, a mass of flaming scarlet. A pot of Browalia, the blue and the white growing together, is a thing of beauty. A white Ageratum is full of bloom and will continue to blossom through the winter. A hanging basket is filled with Thunbergias of different colors, some drooping over the edges of the basket, some climbing the wires which suspend the basket and all covered with blossoms.

Covering the wall at the back of the Conservatory are vines of Cobæa scandens, Lophospermum, Maurandia, Solanum Jasminoides, Passion Vine, Constance Elliott, a rank grower, a Kennedya, and a Jasmine.

All the plants mentioned I have grown from seed with the exception of Solanum Jasminoides, the Passion Vine and the Jasmine. Some of these plants are common for out-of-door culture, but not seen often in the window garden. I have become much interested in getting odd things in plants, and to that end have hunted over all the catalogues.

I have become interested in the Cactus family on account of their oddity, though many kinds have beautiful blossoms. About all they ask is *to be let alone*. As souvenirs of travels they are interesting to me. They can be carried in the bottom of a trunk for weeks, and when brought to light and potted in earth with a goodly proportion of sand will root and grow. I have Cactuses brought from a dozen far distant places that I could mention. No matter if some of them are grotesque in their forms, let us who enjoy so thoroughly the cultivation of plants strike out a little from the beaten paths and add new things to our collections.

For one, I want every floral magazine published in the country, and every plant catalogue issued, so as to keep posted on new plants, and also for the useful information to be had. At some other time I want to tell about my lovely common plants.

781. **Ants in the Greenhouse.** These are very troublesome in the greenhouses and other glass structures, and they so quickly become large colonies that they are frequently a bad nuisance. We have tried many nostrums to drive them away, but there is nothing that so quickly drives them off as a little petroleum poured about their runs and into their nest. We have lately cleared them from an orange tree, which is growing in a pot. Sufficient petroleum was put into a saucer to just cover the bottom, and in this the pot was stood, with the result that in two days not an ant was to be seen.—J. C. C.

777. **Propagating Clematis.** The most general methods of propagating Clematis are by means of cutting and layering. In the first of the two methods of increase, cuttings of the side shoots are taken when the wood is moderately firm, and inserted in pots, pans or boxes, and placed in a frame or under a handlight. The pots should as a matter of course be well drained and be filled with a mixture of loam, leaf-mold and sand. The cuttings must be kept close and shaded until they are able to bear exposure without the leaves flagging. The preferable course is to place the cuttings in a frame or under handlights occupying a shady position, as the conditions are more favorable to them, and the labor involved in covering and uncovering the frame is avoided. Layering may be done from about the middle of August to the latter part of September according to the varieties, but it should be done as early as the state of the wood will allow. Shoots of the current season should be selected when moderately firm and at a point suitable for burying the stem in the border, a longitudinal cut should be made in the stem. The best plan is to enter the knife about one and a-half inches below a joint, and then make a slanting cut extending to the joint, and from one-half to two-thirds through the stem. The cut portion of the stem is then to be laid in a small trench about two inches in depth, fixed in position with a peg of a moderate degree of strength and covered with soil. If the soil of the garden under your charge is naturally heavy provide a little light sandy soil such as the refuse from the potting bench in which to lay the shoots. To prevent the tongues closing a small potsherd may be inserted in each cut as the shoot is being layered.—A. H. E.

How it All Ended.

A Morning-glory was sleeping close by,
With her head in the Hollyhock's lap—
"Come, go along with me," said the bonny Sweet Pea,
"Wake up from your noon-day nap!"
She refused with a frown, a tramp through the town,
She was sure would bedraggle her ebony new gown.

A sweet little miss, with scissors in hand,
Tripped out for flowers that morn—
"Come, bonny Sweet Pea, come go along with me
To the fair, my throat to adorn."
Then a Rose on a spray, which was reaching that way,
Said: "Bonny Sweet Pea you will rue this day."

* * * * * *

The sun poured down and the rain came down,
And the hearts at the fair were glad;
But little Sweet Pea had lost all her glee—
She was looking bedraggled and sad
With a tear in her eye she gave a great sigh,
For her pink poke-bonnet was jammed all awry.

—*Daughters of Heth.*

Buttercups.

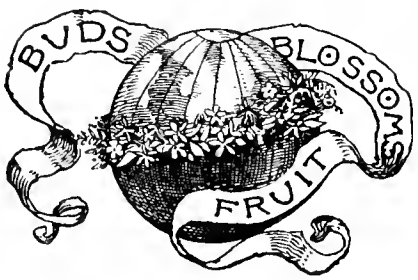
They laugh and dance all through the day
They nod and smile in winsome way,
No other flowers are half so gay—
The merry-hearted Buttercups.

They glow and glisten everywhere,
In city parks in meadows fair.
Ah! well their regal crowns they wear.
The kingly-hearted Buttercups.

—*Nellie F. O'Neil.*

If the summer Rose could guess
Before the sunbeam wooed her from the bud,
And reddened into life her faint young blood,
What blight should fall upon her loveliness,
What darkness of decay, what shroud of snow—
Would the Rose ever blow?

—*Kate Putnam Osgood.*



The Nasturtium came from Peru.

Single Roses are becoming fashionable.

Thin Pears when about one-third grown.

More watering troughs for the highways.

Birds do not like black thread strung about.

Sorghum bagasse makes a good mulch for Raspberries and fruit trees.

A pile of sods should now be provided for furnishing potting soil in the fall.

Dry Weather. Up to this date, June, 15 the season has been extremely dry in Niagara Co.

I use pieces of newspaper to bag or rather wrap my Grapes; this works well.—*Michael Troup.*

The secret of flower growing is to adopt the easiest possible plan that is sure to give good results.—*E. P. Powell.*

Gardening is the hand-maid of civilization; the more enlightened a people become the more do they study the securing of better health, comforts and luxuries. Horticulture provides these.

Handsome Foliage. My experience is that blooms are at the expense of fine foliage. Particularly is this the case with the fancy-leaved Geraniums. Coleuses lose in beauty if permitted to seed.—*Mrs. T. H. Lovejoy.*

Hedges of Roses have been adopted on some European railways to screen the lines from drifts of snow, and thus prevent blocking. They have proved immensely serviceable. The Provence Rose is the favorite for the purpose.

Rose Bugs. All the time that E. P. Powell wants for treating fifty Rose bushes is half an hour. His remedy is two spoonfuls of hellebore in a pail of water with one teaspoonful of kerosene, and kept well stirred in applying. So he says in the Independent.

Don't Want it to Pay. When our esteemed friend A. I. Root, of Bee Gleanings fame, was asked whether he could not make a certain outlay of his pay, he said: "I don't want it to pay. I want to have some recreation that has no dollars and cents about it." Mr. Root possesses many right ideas of life.

Leave the Leaves. To have good fruit there must be good leaves; so go slow in clipping them out. And further, if some must go, bear in mind that one large broad leaf is better than two small ones of an equal combined area. The indiscriminate pinching away of large Grape leaves to admit light to the fruit is a poor practice.

Hybrid Teas. This cross between the Tea and the Hybrid Perpetual section Mr. Henderson places at the head of the list for outdoor culture. They require a little care in covering or shelter in winter, but with that prove hardy throughout the month. The best so far are La France, Duke of Connaught, Coquette des Alps, Captain Christy and Puritan.

A Good Rose. There is a Hybrid Perpetual Rose that I find in but one or two catalogues out of between thirty and forty which I receive that has, in my estimation, special merit. I refer to Mad. Alfred Carrier; flesh white, shaded salmon; a very fine bloomer and good grower; half climbing here. It has a fine perfume, and is desirable in all ways.—*Mrs. T. H. Lovejoy, Mitchell Co., Iowa.*

Vincas. The varieties Harrisonii and Major variegata are trailing plants with ornamental foliage, that of the former being a dark green with a light green center; the latter, a bright, glossy green, margined with white. Their habits of growth being similar, they make nice companion plants for vases or hanging baskets. A desirable feature of these plants is that they can be wintered in a cool cellar.—*Mrs. E. L. Patterson.*

To Kill the Cabbage Worm. I have found nothing better than the following: Seven parts sour milk, one part kerosene oil. They must be thoroughly mixed at the start, and then stirred to the bottom every time the brush is put into the pail or the kerosene will separate from the milk and kill every plant it touches. It is to be sprinkled on the plant with a brush, and if the head has begun to form the leaves must be pulled apart so as to kill the worms, as it kills only those it touches.—*S. C. Farnham.*

Fruit for the Fairs. Mr. W. C. Barry says they could not get good exhibition Pears without thinning the clusters. They use a pole with a notch in one end, which enabled the operator to twist them off rapidly. Usually if the clusters were reduced one-half or more the crop would be more valuable. It seems a pity to cut out the young fruit just as it is formed, but it will pay. Nature does some of this thinning, but not enough. If half the blossoms drop without setting fruit the orchardist will do well to cut out half of those that remain.

Expediting Their Season. White Canterbury Bells, Phlox Drummondi, Garden Carnations and Verbenas, Alyssum and Heliotrope are perpetual bloomers from May till frost, if care is only taken to cut or rub off all blossoms as soon as faded, if not before, and dig a trowelful of fertilizer at the roots every three weeks, with plenty of water and mulch in hot season. It is a labor merely to cut the wealth of bloom by this method. By the way, flowers were meant to cut if not wanted for seed. Better far give them away than suffer them to fade and exhaust the plant.—*Shirley Dare.*

The Productiveness of Land. An idea as to the amount of produce a well managed garden is capable of yielding is well shown by the following statement recently made by G. W. Hallock & Son, concerning their 58 acres of land near Greenpoint, Long Island, during the past year: 3750 bu. of Onions and 4500 bu. of Carrots, Early Cabbage 5500 bbls, early Potatoes 2500 bu, Strawberries 11,000 qts, Onions from sets 2260 bu, White Beans 160 bu, Carrots 11,000 bu; late Potatoes 450 bu, Onions from seed 3000 bu, ears of Corn 2000 bu, Brussels Sprouts 500 bu, Potato Onion sets 10 bu, Carrot seed 40 lbs, Onion seed 100 lbs, Brussels Sprout seed 4 lbs, Cabbage seed 2 lbs, Hungarian Grass 3 tons, Cabbage plants to carry over 250,000.

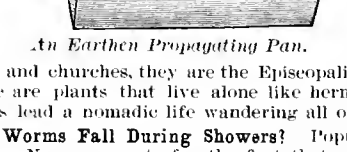
A Propagating Pan. It is very simple, as the accompanying cut indicates, and is likely to be found useful by amateurs and others who have few conveniences for propagating plants. The trough of earthen ware or metal is hollowed on the under surface, so that it fits evenly on a hot-water pipe. The lower part is filled with water, and upon two small ridges at the side a perforated false bottom rests, the soil in which the cuttings are to be inserted being placed on this. The top can be covered with a piece of glass, and in it most soft-wooded plants are said to strike readily. The troughs are 14 inches long, 6½ inches wide, 6 inches deep, and the bottom is made to fit a 4-inch hot-water pipe. We get the idea from the London Gardeners' Chronicle.

Weed Pests in the Lawn. Plantains and Dandelions are a great blemish to many a lawn. A recent reliable writer says he has destroyed thousands of them by dropping crude carbolic acid, also sulphuric acid, right into the hearts of the plants. He had seen the latter used and fail, the plants growing again; but when he supplied the acid to other plants on the same lawn the cure was complete. This showed that the acid in the former case was either too weak or not properly applied. Roots of Dandelion dug up a week after the crowns were dressed with sulphuric acid were found to be burnt right down to the tips a foot below the surface. It is not sufficient to merely kill the leaves of the plants; the acid must enter the hearts quite in the center.

Chrysanthemums for Exhibition. All exhibition plants should be grown in pots, and should be shifted from a smaller pot into a larger, using the richest of earth, until about the first of July, when they are ready to be put into an eight or ten-inch pot, in which they should remain. Water them about twice a week with manure water. Never allow the plants to suffer for want of water, and tie every strong shoot to a stake, not neglecting to pinch out the tops every two weeks until August 1st. To procure extra fine flowers, pinch off two-thirds of the flower buds as soon as they appear. The worst enemy of the Chrysanthemum is the black aphis, which appear in great numbers on the young shoots of the plants. They are readily destroyed by sprinkling tobacco dust over the entire plant while the dew is on the leaves.—*W. C. Pyfer.*

Success With a Johnson's Amaryllis. I repotted my Amaryllis Johnsonii in the fall in a six-inch pot, good friable soil, well enriched with old cow manure, placed it in a cool room, giving but little water until the leaves began to grow, and as soon as they had made some little growth I brought the plant to a corner where it had the sun all day. Kept it well watered, and was awarded with an elegant bloom of four flowers, each of them being over 5 inches in diameter. To my great surprise before they began to fade a second flowering stalk appeared and is now about ready to bloom. I never had such success before. I have had this bulb for nearly ten years, and there has been no increase from it. After flowering I let the plant dry off, and in the spring set it out in the pot in a shady place in my garden until the fall, when I shake out the old soil and replace with fresh well enriched cow manure. —*S. T. White.*

Plants are thus personified by the Western Christian Advocate: The Pepper and Mustard represent a class known as "sharp" people; the Spice trees, others, and Tobacco and Barley, saloon keepers. The Violet and Lily are the preachers of humility, purity and righteousness. The Tea plant and Catnip are the old ladies of the village, without whom society would be incomplete. The Beet and Sugar Cane are confectioners; Roses and Pinks, perfumers; Wheat and Corn, provision dealers; and the Cocoanut palm furnishes as many articles as a country store. The little wayside plants by stagnant pools are scavengers. Some plants prefer water, they are the Baptists; some run all over, they are the Methodists; some stand up straight and orderly, they are Presbyterians; others cling to ancient



An Earthen Propagating Pan.

walls and churches, they are the Episcopalians. There are plants that live alone like hermits; others lead a nomadic life wandering all over.

Do Worms Fall During Showers? Popular Science News accounts for the fact that after some rainfalls, angle-worms are occasionally found in crocks or other vessels placed under trees or roofs of buildings, by certain birds, as robins, having a short time previously deposited them, or left them suddenly by an attack from jay-birds, or being otherwise scared away. If under a tree; or even in a clear space, the worms would be dropped at once into the vessels; and as they are smooth inside, on account of the glazing, the prisoners would have to remain. If dropped on a roof, and the roof is old and mossy, they find lodgment under spots of old moss or under the ends of spongy shingles, where they remain until the rain induces them to crawl out and be

washed down over the drip, or sometimes through pipes into closely cemented cisterns. Children, playing, often put such objects in out-of-the-way places, to see if they will swim, or to tempt some bird to procure his dinner.

To Make Rose Perfume. The manufacturers of Rose perfume, according to an English Exchange, when they wish to preserve Rose-leaves fresh until they have got a sufficient quantity to distil, or use in other ways, are in the habit of separating the leaves from the stalks, and mixing them into a paste with salt, in the proportion of 6 lbs. of leaves to 1 lb. of common salt. This, put in jars, will keep any length of time. Packing alternate layers of salt and fresh Rose leaves away in jars is a first-rate, simple way of getting a fine essence of Rose. Let the jars remain covered in the cellar for a month of two, then put the pulp into muslin, and press the moisture from it. Bottle this essence, and let it stand out, well corked, in the sun and dew until it is quite clear. One part of this essence, one part of spirits of wine, and ten parts of spring water will give you a fine flavored rose-water. A good tincture of Rose leaves may be made by simply steeping them in strong spirits; while three parts of leaves of just-opened Roses to four parts of sweet olive oil, pounded in a mortar, kept still for a week, and then expressed, will give you an excellent oil of Roses.

The Variegated India Rubber Tree. The ordinary green-leaved Rubber Tree, *Ficus elastica*, is not excelled by any other plant in existence as a handsome window plant. To call attention therefore to an interesting form of the species the tree named in the heading and known botanically as *Ficus elastica variegata* should here prove desirable, for this variety is almost as well adapted to house culture as the parent, and the pleasing variegation in the leaf gives it a peculiar charm. Though this plant is not new, it is not common, and when well grown is unquestionably beautiful. It was first brought out at one of the Liverpool, England, flower shows a few years ago, and was awarded a first-class certificate. Since then the plant has gradually spread, though it is by no means seen everywhere; yet it appears to improve on acquaintance, and we know has been bought freely by some growers who anticipate it will prove good for the market and the million. In its early stages the variegation is not very clear, but the greenish yellow portions change with age to creamy white, and when the plant is healthy and the normal color rich and deep the contrast is highly effective.

THE VARIEGATED INDIA RUBBER TREE.

Budding Roses Early. I have added to my little list several Roses this spring, but cannot expect to see them bear flowers up to the mark this season on their own roots, but do expect to have them on large strong stocks upon which they will be budded as soon as they have wood from which buds can be taken. As soon after budding as the bud has taken hold pinch the points of the stock, and when the young begins to swell cut back to within six inches of the bud, pinching all the shoots off above and below the bud. In a short time the bud will begin to grow, and by the fall frosts there will be Roses far superior to those grown on the little plants. There is a bud of Star of Lyons two years old in my garden, from which I cut the last Rose this morning which was the sixteenth for the first crop, and there are other buds coming on. And such Roses! three inches in diameter, with the darkest shade of yellow I ever saw in this variety. This in measure reconciles me to the loss of my Marechal Neil and Perle des Jardins. The man who will produce a hardy perpetual yellow Rose, with the color of the old single yellow I used to see thirty years ago, will have a fortune left him. That rich deep golden color has not yet been attained in any of the perpetuals.—*S. Miller.*

On the lawn at "Woodbanks" stands a handsome specimen of Kilmarnock Weeping Willow. It is nine feet high, of the same width, and has a trunk six inches through. No particular attention appears ever to have been given to this tree except that of keeping its top primly rounded over by training, with the result of giving it a symmetrical rather formal appearance. A considerable degree of stiffness might also be said to have been present in its looks previous to a few weeks ago, owing to an accumulation of dead branches on the bottom of the head, and which tended to direct the growth outwards rather than gracefully downwards. We early decided on a simple change of treatment, namely, to allow the tree at its extreme top to grow as it will, with a view to some irregular grace in its outline, and every particle of the stiff dead wood in the lower interior part of the tree has been trimmed out. The result even at this date is most satisfactory in the respect that the side branches droop more pleasingly, and the top outline is already slightly relieved from the formality that the pruning knife had here induced. And this reminds us to say that the Kilmarnock Willow is in appearances more often injured than benefited by the use of the knife on any but dead branches. In this of course we do not refer to the wild sprouts that sometimes spring directly upwards from the trunk; all such must be removed as soon as they appear.

Saving Time in Garden Work. Even with a small garden it is an easy matter to arrange it so that the labor of cultivating will be considerably increased, and then, if in addition you have poor tools to work with, you can increase this so that it will be quite a task to keep up sufficient cultivation to insure a proper growth. Planting in long rows so that the larger plants can be cultivated with a horse and plow, or with small garden plows and cultivators, will reduce the labor required materially. With using a reel and line and a marker to furrow out the rows, a drill to sow or plant the seed, and a garden plow and cultivator to do the work of cultivating, a very considerable difference in the time required can be saved. It is comparatively a small matter to go into the rows with either the plow or cultivator, and the narrow space left by them is very readily cleaned, at least I find it so. I have a family of eight and consider it necessary to have a good sized garden, and by following this plan I find it requires considerable less work than when I used to make all the garden in small beds and expected to do all the work of cultivating with the hoe. I can cultivate now a considerably larger garden with less time and keep in a better condition now than by the old plan. The tools cost but little and will pay for themselves in time saved in a short time. I always consider it economical to purchase and use implements, or adopt a plan that is surely labor saving.—*N. J. Shepherd, Miller Co., Mo.*

Floral Matters in New York City.

By the time June is over the florists have little to do, except in the way of funeral work. Decoration day did not bring as much as was anticipated, though a good many plants were sold. Plants and loose flowers always take the lead now, on any special occasion. In designs, the wreath was first favorite. It can be varied more than any other form, and it is more used than anything else in the cemeteries. There was the usual display at General Grant's tomb, in Riverside Park, in the way of a great many designs in Immortelles, which were, as a rule, hopelessly ugly. The Cape Flowers, in spite of Everlastings, are really pretty, but designs in ordinary Immortelles always look as if they were made with a trowel. A design in memory of General Grant, ordered by the Mail and Express, was a column some ten feet high, topped by an urn. On one side was an eagle and the American coat-of-arms. As it was to be exposed for some time, the foundation of the design was of Cape flowers, though filled in and garlanded with fresh blooms.

Florists who have a large clientele among poor people usually make the foundation of their designs in these Cape Flowers. Of course a grower can't be expected to approve of the custom, nor does it commend itself to persons of fine taste, but it enables people of narrow purse to give very handsome-appearing designs at about one-third their apparent cost. Emblematic designs in Cape Flowers are always kept on hand, so that they may be "made over," like a last year's bonnet, to fit half a dozen different occasions.

The few entertainments now taking place are all very quiet, and there is little in the way of decoration. A pretty thing for the dinner table, ordered by a woman of original taste, is a large loose wreath of Mermet Roses, nestling in their own foliage. Not a bit of foreign foliage must be admitted, and the Roses must lie in an irregular form, as if carelessly thrown down. A centerpiece, carelessly filled with the same sort of Roses, is stood within the wreath.

A pretty basket, presented on the occasion of a golden wedding, was a graceful flaring shape of wicker, filled with apparent carelessness, the flowers being Bride Roses and Lily of the Valley. A bow of old gold ribbon was tied to the handle.

An exquisite plaque for covering the top of a casket was filled with white Roses and Lily of the Valley. Three Palms were laid upon it, spreading like the Prince of Wales feather, and tied together with a sash of white ribbon. Below the leaves was a loose cluster of pale lavender Orchids.

Boxes of loose flowers still seem the favorite gift. Among the outdoor stuff used in this way are the big old-fashioned Paeonies, crimson and pink, they are not by any means to be despised as a decorative feature. A big old china bowl loosely filled with these striking flowers, is strikingly handsome.

Masses of Hydrangeas are much used in room decoration; they are both plentiful and effective. All the outdoor flowering shrubs are being much used in rooms; quantities of Weigelia or Deutzia are particularly showy.

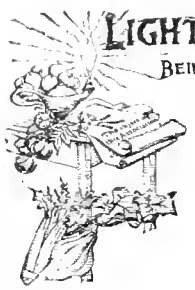
For weddings, a floral screen seems to be much admired; at a country wedding in the end of June this was to be covered with roses, giving as much as possible, the effect of nature. Bridesmaids prefer baskets, rather than bouquets.

There is a revival of the wreath or chaplet for a bridal head trimming; it is very picturesque when woven with a veil, but must be tastefully arranged. A recent bride wore a beautiful wreath of Florida Orange blossoms, and carried a nosegay of the same. As a rule, Lilac and Lily of the Valley have been the favorite bridal flowers; well made garlands of these flowers are very dainty. Probably we shall see an introduction of Myrtle wreaths worn by German brides; they are very pretty arrangements, apart from their legendary value.

Some of the florists say that the use of flowers is certainly increasing every year, but there are so many in the business now that the increase does not add to their profits.

The most shown corsage bouquets are displayed at coaching parties; roses as a rule. Still they are not such immense flower-gardens as they were, but the days of the corsage bouquet are not over yet, by any means.

EMILY LOUISE TAPLIN.



Plants in the Window. No home of taste is complete without a window garden. It is the least expensive and most simple of all the departments of rural taste, and impossible to none.—*C. S. Smith.*

Burying Grapes. P. B. Crandall stated, before the Western N. Y. Horticultural Society, that Grapes, picked and wilted, then buried in stone jars three or four feet below the surface, will come out with stems green and fruit plump and bright in the spring.

For the Trees. A mixture of copperas and glue is the best thing I know of to keep rabbits and mice from trees. I lost a great many before I commenced using this preparation. I have tried tarred paper, and do not like it; it is too slow. *A. R. Whitney.*

When to Apply Manure. At the Spring meeting of the New England Agricultural Society, Dr. Goessman, in reply to questions, said that manure should be applied to the soil as soon as possible. He was not sure but barn cellars are doing harm by encouraging the keeping of manure for several months. On level land there is little waste from immediate surface application.

Locust Trees for the West. Many will remember that the Black Locust was about the only timber planted on the prairies of Illinois years ago, but the borers got to working on it so badly that people ceased planting. We are commencing to plant it again in Iowa, and the borers do not attack it as badly as they used to, and when planted with other timber it escapes the ravages of the borer almost entirely. It is the most valuable timber we have. We consider it of much more value than the Catalpa.—*Professor Budd before the Northern Illinois Society.*

Pruning Orchards. I will give my method. The trees should not be allowed to go as they please. Keep them low, so that a man on top of an eight foot ladder can pick all the fruit. Cut out the top and center of the tree so that the sun can get into the center of it. This will cause young branches to grow out all along the body and main limbs of the tree, and these, when they are not expected to fruit, should be clipped off to within an inch of the stem. For every one of these cut off from two to six more will grow out. Thus you will have a fine lot of fruit-bearing branches all along the inside of the tree. A tree thus pruned can bear up all the fruit that will grow on it; it will bear more and the fruit will be of the first quality. Herein, I believe, lies the secret of growing fine Peaches.—*E. A. Richl.*

Horticulture. President Earl in a recent address hit the mark when he said Horticulture is a broad term. It covers almost everything that makes our country beautiful and sweet to live in. It embraces the operations of the fruit grower, the skillful manipulations of the gardener the arts of the landscape builder, and all that relates to the planting of forests in a land that perishes without them. Every horticulturist should be a missionary. He should be an educator of the public taste as regards trees and flowers and lawn plantage and fruit gardens. He should be an enthusiast for the beauty of his town. He should stimulate the making of parks; the adorning of cemeteries and school-house yards; the planting of groups of roadside trees. The true horticulturist will make his mark in the community in which he lives.

Commercial Fertilizers. Following are a few comments on these as made by members at the last meeting of the Western N. Y. Horticultural Society. Green—The Fruit Growers in this section seem afraid to use them, though in other parts of country they are depended upon to quite an extent. Barry—Can't tell what we are buying. Hooker—Nothing so satisfactory as stable manure, though has used other fertilizers. Nitrate of soda had a remarkable effect on Currants, at the rate of three hundred pounds per acre. Its action, however, is only that as a stimulant; no plant food, to speak of, in it. It is also of value with Fall Spinach. Dunning—Had used ashes and other fertilizers, but prefers pure ground bone, which in the vineyard is applied at the rate of one hundred pounds per acre. Varney—The most successful Strawberry growers use one ton of ground bone per acre, composted and heated before applying. It is also an excellent material to compost with hen manure.

To Beautify the House will pay. It should be adorned with brilliant and fragrant flowers. Flora's gifts are free to all. She scatters them in the valley, on the mountain-side and hill-top. The Rose will bloom as freely on the rustic bower of the poor man as on the tasty arbor of the rich; will unfold its buds, give its fragrance in the poor man's cottage as freely as in the rich man's palace. If all our Kansas homes were thus beautified what a grand State we should have! How attractive to all that come within her borders! It would be the best advertisement the State has ever made—be worth more to her in dollars and cents than all the booms manufactured by syndicates. In spots for beautiful homes nature has done her best in her grassy knolls and sunny slopes. They need but the touch of taste and genius to make them lovely. The refining and moral influence of the beautiful, happy home can hardly be overestimated. The hallowed memories of such a childhood home will cling to us through all our after life.—*President Wheeler, of Topeka, Kansas.*

Green Manuring. Of course in green manuring we don't add mineral matter, we add atmospheric plant food. The leguminous plants, of which Clover is the leading one, take more from the atmosphere than Rye and Barley, and others. Then again these plants have large roots. They extend far into the ground. They carry the plant food from the lower part of the soil where the plants have their growth. It is a substitute for sub-soil plowing. They reach two or three or four feet below the surface, and bring matter to the surface. Thus they furnish food for the plants that succeed them. The plant food needs to be brought where it does the most good. The root is an important part of plants. Rye has a spreading root while Wheat has a compact root. The roots are not capable of going around for food, therefore Rye may succeed and Barley succeed, while Wheat fails. For every two or three years there should be a crop of that kind and there should be trial cultivation with them. Stirring the ground up from time to time breaks up the weeds, and does more for the cleaning up of crops.—*Dr. Goessman before the N. E. Agricultural Society.*

Forestry Points. The Pennsylvania Forestry Association wants every owner of woodland, to know that his wood-lot contains a valuable crop, which it will pay him, not only to not cut down and slaughter, but to manage and utilize judiciously. That the time has come when forest destruction must give way to forest management; for timber is becoming more valuable every year, as it grows scarcer in the country at large. That in the woodlands in proper proportion lie, to a large extent, the conditions of a favorable climate and successful agriculture and healthfulness. That the forest breaks the force and tempers the fury of the northern, and cools and moistens the breath of the southern wind, thus tending to equalize temperature and humidity over the intervening fields. That while open, treeless, heated areas prevent the fall of rain, allowing moisture laden clouds to pass over undrained, we must thank our forest-clad hills and mountains for our more frequent, more gentle, more useful showers; and, above all that the forest cover preserves the even water flow in our springs, brooks and rivers, while its destruction or even deterioriation, increases the danger of floods, and the washing of the fertile soil.

Grapes for the North. Judging by our experience, we would cut the list of varieties planted down to a small one, of which the Moore's Early should lead, mainly because it is a Grape of fair quality and very early; earliness is the great desideratum in a state so far north as Wisconsin. After the Moore comes, in our estimation, the Worden, Concord, Wilder and Delaware in the order named, though for shipping, the Worden might have to come last on the list; for family or home consumption it stands next to Moore's Early. Don't plant everything offered by the traveling tree peddlers. Even if they are reliable they charge two prices for things. Buy of reliable nurserymen living near you who have business standing, or from nurserymen advertising in reliable agricultural papers. What farmer would think of buying horses or cattle of traveling agents who showed pictures of the horses or cattle they proposed to deliver? The fraud would be too apparent, yet the same persons will buy plants and trees eagerly of peddlers who show overdrawn pictures. Any of the Grapes named can be bought at from 10 to 15 cents a vine, according to variety, of nurserymen. Leave high-priced novelties for amateurs and specialists to test.—*Prof. W. A. Henry, Wisconsin Experiment Station.*

Treating Peach Yellows. Mr. J. H. Hale gave some of his experience in this line before the Mass. Horticultural Society recently. He said that after getting into the Peach business in good earnest, his last previous planting having been 5,700 trees, he gave much care and thought to his orchards. One thing was particularly noted in his extended travels—that of many unhealthy orchards none had received any very heavy applications of potash, if any, while of the healthy ones most had been treated with it. Also, the trees that had the whole field to themselves, with clean culture, were far more healthy than others. No trace of yellows had as yet shown itself in any of Mr. Hale's orchards that had received potash, but last season a hundred or so had a sickly yellow foliage, with some curl to the leaf, and many said this was the yellows, but an application just before a rain of two pounds of nitrate of soda per tree soon changed this to a dark, healthy green, and a rapid growth commenced and continued till fall, when the trees were apparently as healthy as any in the lot. The first trace of real yellows was seen in 1885, when one tree in the middle of the field sent out from its body and larger branches many small, wiry shoots, producing small, yellow, lance-like leaves—an indication that it was in a very advanced stage of the disease. Ten pounds of potash and five pounds of nitrate of soda was put on immediately, and vigorous growth stimulated. Early in the following spring fully one-half the top was cut away, and more potash and soda given, with extra cultivation, and by August this tree was the pride of the whole orchard, its rapid growth of dark green foliage being noticeable above all others, and the past season it bore a full crop of healthy fruit. In 1886 one whole row of trees had all the symptoms of the disease, yet with the same treatment the past season they came out bright and fine, and matured their fruit perfectly. Still other trees showed the disease two years ago for the first, and many did the next year, but past experience leads to the faith that they can be saved for a time at least, and Mr. Hale will attempt it before sacrificing them.

Draining to Lessen the Effects of Drought; Sub-Irrigation.

[*James E. Jones before the Rantoul, (Ill.), Farmers' Institute.*]

Old Method of Draining. Heretofore it has been our object to get rid of any overabundant rainfall in the quickest possible way, hence we have dug large open ditches or canals for outlets, and run our tile ditches into these as shown in Fig. 1.

This plan is very good in wet seasons and insures a crop, other conditions being equal; but in very dry seasons they are practically useless, as the writer could prove by facts if necessary. The water which falls so plentifully in the spring is by the above method drained off and thrown into the rivers and finally into the sea. We never know when we shall receive our next supply.

New Method. The method I propose to adopt in laying tiles enables the farmer to govern the flow of water from his lands, and save a part of the moisture he now discards, to be taken up by the plants when dry weather comes on. Instead of laying the tiles on a grade parallel to the general fall of the surface, as in Fig. 1, lay them in section on dead levels, as shown in Fig. 2, A, B, C, with a jog or step connecting these sections, and another at the outlet. Place at points *a*, *b*, *c*, traps or gates in the tile, which can be operated from the surface, and at which the discharge of water may be governed. This line of tile may represent the main tile, on say 80 acres of land, into which laterals may be run on the same levels.

To operate this system properly it would be necessary to keep the traps open in wet weather, allowing a free discharge of the surplus water; but as soon as the surface becomes dry enough to cultivate, the traps should be closed and all the moisture then in the ground retained. As a matter of course, the surface of the higher level (Sec. A) would become dry first, then trap "*a*" should be closed. Section B would become dry next, and C last. In this manner all the benefits of tile drainage can be obtained and the soil kept moist underneath for a much longer period than in the old way.

Sub-Irrigation for Droughts. Thus far it is shown that a partial remedy against drought may be gained with very little addition to the cost of drainage; but there are seasons when the earth becomes dry both above and below the tile, and in such seasons all the water retained by the closing of the traps would disappear, leaving the crops in a dying condition for want of moisture. It would then be necessary to use the tile for the purpose of under-irrigation, which when laid on this system could be easily accomplished in the following manner: Dig a reservoir (which could be utilized as a fish pond) at the head of main tile A, B, C, having a connection with the tile, governed by a flood gate. The water supply in this

FIG. 1

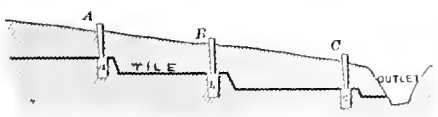


FIG. 2

Old and New Methods of Draining contrasted.

pond could be kept up by means of a windmill pump. When it becomes necessary to supply moisture to the crops, close trap "*a*" and open the flood-gate; the water would then flow into all the tile on section A, where it could remain for a few hours until it percolated to the roots of the plants. Then close trap "*b*" and open trap "*a*" until section B is saturated; repeat the same operation on section C, and the whole tract is moistened. It will not be found necessary to irrigate more than once or twice during the dryest season to insure a bountiful crop, when without it the crop would be a failure.

Where Applicable—Cost. It may be argued that this system will not apply to all farm lands, owing to unfavorable contour of surface, distance from outlet, etc. This, I am willing to admit, but there are few places on which under-irrigation and retention of moisture may not be applied in a form perhaps somewhat modified from the above. The cost also may be advanced as an argument against the plan. Even this is not so great as may be at first supposed. The tiles laid in this manner cost no more than when laid in the common way. Then all we have to consider is the traps, which may be simple and cost very little. The fish-pond (which any farmer may construct himself with a plow and scraper), say 20,000 cubic yards at 5 cents per yard, $1000. The tubular well and pump, $150. The windmill, $75. Total, $325.

Now if this plan will increase a crop of corn 20 bushels to the acre on 80 acres, we get 1,600 bushels of corn with no additional cost in cultivation. This to-day, is well worth 40 cents per bushel, or $640, which pays for the whole plant and leaves a surplus of $315. Nor do the advantages end here, as who can measure the value of flowing water on a farm.

The Garden Culture of Roses.

(*Continued from page* 199.)

Other Garden Roses. The next list comprises a few fine garden Roses. Except Paul Ricat and Stanwell, they are not perpetuals—

Cheshunt Hybrid, a Hybrid Tea.
Blairii No. 2, cupped, Hybrid China.
Catherine Bell, Hybrid China.
Souvenir de Pierre Dupuy, Hybrid China.
Charles Lawson, Hybrid Bourbon.
Coupe de Hebe, Hybrid Bourbon.
Mme. Plantier, Hybrid Bourbon.
Paul Ricat, Hybrid Bourbon.
Paul Verdier, Hybrid Bourbon.
Stanwell Perpetual Scotch.

Some of the latter introductions which bid fair to become desirable acquisitions are—

American Beauty (called by some of the English growers, Mme. Ferdinand Jamain),

Clara Cochet,	Earl Dufferin,
Edouard Herve,	Grand Mogul,
Her Majesty,	Mlle. de la Seigliere,
Mme. Joseph Desbois,	Mrs. Caroline Swailes,
Victor Hugo,	Mrs. John Laing,
Puritan,	Sir Rowland Hill.

Mme. G. Bruant is one of a new class obtained by crossing the single Japan species *rugosa* with Sombreuil (Tea). It flowers all the year, and although the foliage is of the *rugosa* type, the young shoots are purple. The flowers are large, half full and of a dazzling white, very fragrant and rather pointed like Niphetos; they are borne in clusters of from six to twelve.

Tea Roses. A bed of Tea roses should accompany the Hybrid Perpetuals in every garden, for the purpose of prolonging the blooming term, as the teas are the only true perpetuals. They should be planted in beds in a rather dry position, somewhat shaded from the strong sun, and in regular rows, so that the plants can be covered with soil, leaves or litter for their protection. The best way is to place soil and leaves about the plants in alternate layers; these freeze together and make a solid barrier against the inroads of moles or mice. They will well repay the trouble by a magnificent display of flowers, coming into bloom quite early and continuing until late in autumn. The essayist has grown Devoniensis, one of the most tender of this class, for five or six years in the same position, and the plants have gradually increased in size from year to year. He cut Devoniensis and Gloire de Dijon Roses on the 5th of June last; the latter is one of the hardiest varieties of this class for bedding purposes. Other excellent kinds are Mme. Lambard, Marie van Houtte; Perle des Jardines, Souvenir d'un Ami and Sunset. Homer is a little gem, and quite sturdy in constitution. We must bear in mind that it is in this class that we find our yellow Roses, in which Hybrid Perpetuals are lacking.

Noisette Roses. Some of the Noisettes should be included in a bed of Teas, as Celine Forestier, pale, yellow, fine and fragrant, and Mme. Caroline Kuster, globular flower, pale yellow, free. Marechal Niel can be used as a Climber or Pillar Rose, laid down in the autumn, to be covered with soil, as is done with the Raspberry; it will then withstand the winter, and if cut back slightly in the spring will produce a good crop of rich golden yellow flowers the next summer.

Pruning, Disbudding, Etc. Having selected our varieties and properly planted them in the fall, drawn the soil nicely about the plants from eight to twelve inches high, and heaped above this either manure or spent hops, as early in April as the ground is dry enough to work freely level off the soil in the rows, covering the manure under as much as possible if it was put on in the fall. In a few days, when the buds have swelled sufficiently to show their condition, the plants should be cut back to the plumpest bud, cutting in the weakest growers to within four or six buds above the ground, particularly if growing for exhibition purposes; if large blooms are not required the shoots may be left longer. The strong growers must be left as long as sound buds and the wood will admit. Intersecting shoots should also be cut out so as to leave the center of the plant with a free exposure to the air and sun, for it is among these short stems that the red spider and other pests harbor in the summer. Another important point for exhibitors to remember a few weeks later in the season is that for growing large flowers a certain amount of disbudding must be practiced. Around the central flower bud will be noticed two or three smaller buds, which must be removed to throw the entire strength into the central bud; then, if properly cultivated, the single stem will carry a splendid flower. Several applications of liquid manure to the root of the plant (not too strong, about the color of weak tea) a few weeks before the bud opens will have an invigorating effect upon the flowers. This application should be made again after the first crop is over, to give increased strength for the autumn bloom.

Insects. But we cannot have good blooms without fine foliage, and this can be secured only by early and constant attention. As soon as two or three leaves are formed in the spring we must dust or sprinkle them with hellebore, and watch for the worm that ties the tender leaves together to destroy him, for he will soon be ready to nip the delicate bud. He is easily found by a little attention at the right time, and after overcoming his advances we may expect to gather a harvest of beautiful flowers. The rose-bug will be the next invader, and must be picked off as soon as he appears; last season there were but few with us. The green fly must also be looked for, and hellebore is useless for them, whale oil, soap and tobacco steeped together being the only remedy.

Mildew, Rust, &c. We come now to one of the worst drawbacks to satisfactory Rose culture, viz., mildew, a peculiar disease which, if neglected for a single day, increases with wonderful rapidity. The essayist gave a full description of this fungus, and also of the orange-colored fungus which attacks the leaves, both being illustrated by diagrams. Mildew does not seem seriously to affect the life or strength of the plant, being a surface disease and not striking in. The Comtesse Serenye is one of the most liable to mildew, yet it grows with grand vigor from year to year. In fact, mildew does not claim as its victims the weakest growers, but takes the strongest, such as that splendid variety Mme. Gabriel Luizet and others of like character. The last of July and August is the time to be on the watch for it, when cool nights follow warm days; you must then be ready the next morning with your sulphur bellows, for the enemy will surely be there. If all affected leaves could be gathered and burned (which would be quite possible with a small collection) the chances for transmitting the disease would be greatly lessened.

Orange rust or fungus is the reverse, in its action, of mildew, coming from the inside of the leaves and stem. It chiefly attacks the lower leaves of the smooth-wooded class of Rose plants, such as Victor Verdier, Countess of Oxford, Hippolyte Jamain, and the like, while it is worthy of remark that Mme. Clemence Joigneaux, William Warden, Edouard Morren, and those of similar character of foliage, are seldom subject to these forms of fungoid diseases. Cutting off the affected branches and burning them is the best remedy; cut freely, as is done for the blight on the Pear, but be careful to prevent the rusty powder on the underside of the leaf from being scattered to disseminate the disease, and keep the decaying leaves raked up and burned.

Black spot on Rose leaves is another form of fungus, caused undoubtedly by atmospheric changes; no remedy is known except to pick off the leaves and burn them. It attacks them in the greenhouse when the thermometer falls at night, and soon affects the health of the plant, but can there be avoided by a careful control of the temperature and prudence in the use of water.

The concluding advice to a beginner in Rose culture is to plant a few kinds at the start, thoroughly acquaint himself with their character, and gradually plant more; practical experience being the best guide.

Marketing Vegetables at Boston.

[*Mr. Sullivan before the Market Gardeners' Club of Boston.*]

There is no market of the United States where the standard of quality of vegetables is so high as the Boston Market, and no market where the style of arranging and displaying of vegetables is so necessary if you want to get the top price.

The standard in demand requires that three dozen roots of Celery must constitute a barrel box. Six dozen Lettuce (if from glass culture) must fill a barrel box, four and one-half dozen if from the field. Ten Radishes make a bunch, and the Radishes must be of a size that 100 bunches fill the box; in fact all varieties of vegetables have their especial requirements, to meet the demands of the trade. What other market in this country have such iron-clad rules that must be complied with? A breach of these rules is punishable by a reduced price for such truck.

So you will see that in order to have your goods in shape and style partially enumerated as above, the gardener finds it necessary to be somewhat of an expert in many of the arts and sciences. He must be a farmer and gardener, a carpenter and a glazier, good salesman, also an understanding director of help. His head must be continually taxed with the great number of petty details of his business.

Dates of the year play an important part in his operation, certain seeds must go into the ground at fixed dates. Plants require handling at a certain stage of their growth; cultivation by the several implements going through at certain stages of their growth of both weeds and plants; and these same exactings carried through the year even to the smallest operations. To be a successful market-gardener requires the brains of a lawyer and the skill of a doctor. No slow, young, lazy, illiterate man can compete with the standard gardener of to-day.

Our skilled market-gardeners are pushing their way into Southern territory and their influence is felt by the transporting of their goods into our Northern markets to such an extent that when our goods are sent to market they find the palate of the people has been satisfied in advance by these same skilled pioneers who have pushed themselves into Southern territory. Who is there among our number that would entertain

for a moment the idea that Southern Lettuce could be sent to the New York market, and compete in quality with Northern grown. But they have done it the past Winter, and our principal market for Winter lettuce that is grown under glass has felt the influence in low prices, hardly an equal in the memory of the oldest gardener. What is true of Lettuce is also true of many other vegetables.

The mode of trading in our markets here has changed in the past few years. Formerly our gardeners drove their teams into South Market street, and sold to the store dealers, which were located in the different parts of Boston and vicinity, who came to us and traded or bartered for our goods. Now our dealings are carried on largely with the middle men, who swarm around our trains long before the gray dawn makes its appearance in the East, buying up all the No. 1 goods and carrying them to their stores and vicinity; so when the store dealer makes his appearance on the scene, he finds upon our teams nothing but third-rate vegetables, vegetables only wanted by the peddlers, which he refuses to buy at any price, and in order to satisfy his customers he finds it necessary to go to the middle men and pay them an advanced price for what the same goods could be bought from our teams. I say the closer we hold to the store dealers the better we are off, for as I understand there is at the present day a combination among the middle men, an organization with capital to buy up produce with the view of cornering the market.

The benefits that we may derive from this association are innumerable, and it has sprung into existance none too soon. If ten years ago had seen the same institution we would all be better off to-day. There is one very important matter that this association can do. It can have located in some central point a bulletin board with a semi-daily quotation of the average prices current that day, for the benifit of those gardeners that are not called to market as often as some others, and are not as familiar with prices. They upon arriving at the market could confer with this bulletin and get somewhere near the market price for their goods. As it is now, the gardeners enumerated above are at the mercy of these same middle men, who have their agents in and about market waiting for just such snaps, at a discount of sometimes twenty-five per cent. All this could be avoided could he confer with some honest authority.

Chrysanthemum Cultivation by Amateurs.

(Continued from page 200.)

Training the Large-flowered Section. The dwarfing or cutting down system is practiced rather largely, and for some purposes is useful. I do not advocate cutting down, for the reason that the blooms lack depth and fine finish. When practicable grow them on in the usual way till the beginning of June, and then cut back to within four inches of the pot. After this keep them moderately dry until they begin to break; thin out the shoots, leaving three or four of the strongest, and attend to the plants as usual.

In dwarf trained specimens the principal points to be aimed at are fine flowers, good foliage, and neat training. Strong plants should be selected early in February; place near the glass in a genial temperature. When about six inches high pinch out the points. Shift into six-inch pots when commencing to break, still keeping them in the same temperature. When becoming established remove to a cold frame. As soon as the shoots are long enough training should be commenced. Fix a wire under the rim of the pot and gently pull down the shoots until they are in the required position. Admit air on all favorable occasions, syringe early in the afternoon, and when more root space is required place in eight-inch pots. Attend to the tying down of the shoots as before, hardening off the plants so as to fit them to stand out of-doors early in May. Select a sheltered but light position, and protect from frost. By the second week in June they should be shifted into twelve-inch pots, in which they should remain. Stand them on slates a good distance apart. A wire hoop painted green and placed round them six inches from the pot is the best means of training the shoots. On all fine days syringe in the morning and again in the evening. Stopping the shoots should be discontinued by the first week in July or poor flowers will be the result. Willow sticks painted green should be used, as they are light and of neat appearance. Weak liquid manure occasionally applied will greatly assist them.

Training the Pompon Section. In the production of fine flowers these are best struck in February, and stopped once or twice during the spring. Disbudding must not be practiced to such a great extent as in the case of large-flowering sorts, but a moderate thinning out of the buds will always repay. With reference to liquid manure I have found none to suit Chrysanthemums so well as the following preparation: In a large tub place one bushel of soot tied securely in a thin bag, one barrowful each of thin cow and horse manure; fill with soft water, stir the whole well up before using, strain through a half-inch sieve, dilute until the liquid is of the color of weak tea. Recharge when the manure has become exhausted of its goodness; occasionally give them for a change weak guano water, or liquid manure powder. The guano and liquid must be applied with great care, because of their great strength.

Taking in. By the first week in October all the plants should be safely housed. When first taken indoors allow them as much room and air as possible; as they become used to the change they may be stood as close together as the pots will allow. Water when required, but always do the watering in the morning. A little fire heat in damp, cold weather will greatly help to improve the quality of the flowers, particularly the Japanese, and with a little top ventilation will act as a preventive of damping the petals, which often plays sad havoc with large, massive flowers especially where several touch each other.

Diseases and Enemies. These are numerous in some seasons. I have always noticed there are more blind and deformed buds after a long spell of hot dry weather than in ordinary seasons. Mildew is sure to make its appearance, more so on some varieties than on others. As a preventive, dust occasionally with flowers of sulphur. When in a young state the common green aphis is often very troublesome, by attacking the points of the shoots. Strong tobacco water is the safest and best remedy, dipping the plants thoroughly. Syringe two hours after with soft, warm water. Earwigs are also troublesome pests from the time the buds are forming until the flowers expand, frequently doing great damage to the petals as they unfold. These must be watched for night and morning. Bean stalks cut in lengths of about six inches make capital traps, placed among the plants. The pests can be readily blown into a pail of hot water in the morning, for they are easily dislodged. I have seen as many as a dozen earwigs blown from one stalk. Another insect, commonly known as the "jumper," does much mischief to the points and buds. I know of no remedy for this except killing with the thumb and finger. But the most destructive of all the insect pests that I have met with is an insect which in its young state resembles the black aphis, but becomes of a light green color later on. At the later stage it travels round the shoots very rapidly when disturbed, and when fully developed turns to a soft, brown fly. I know of no remedy for this except catching and killing it. It is a good practice to dust the plants occasionally with tobacco powder, also keep a few leaves on the surface of the soil.

Cranberry Culture on Cape Cod.

[Extract from a paper read by O. S. Butler, of Georgetown, before the Essex Agricultural Society.]

The cultivation of the Cranberry on Cape Cod commenced nearly fifty years ago, in the town of Harwich, by Hiram Hall. The sale of the Cranberries has brought more money on the Cape during the last forty years than all other home industries combined. The information communicated herewith was derived from visits which resulted in examining 200 separate bogs, ranging in extent from one-third of an acre to 150 acres.

Many cautious farmers think the business of Cranberry raising may be overdone. In many countries of the world the Cranberry is entirely unknown. Ten years ago the Cranberry was not known to any extent in the great city of London. We are assured by the best medical authority that the Cranberry contains the best vegetable acid known to science; and as soon as some enterprising American shall start the business of canning the Cranberry in its natural state, a market will be opened up for this fruit in all the armies and navies of the world, while all the hospitals and asylums will adopt its use.

Soil. The land best adapted to the culture of the Cranberry is not the sandy shores of bays and gulfs and seas. All experiments in growing the Cranberry among the sands of the seashore have been without success. Neither have there been any successful experiments upon high lands where they had moist and springy surfaces. Many persons have supposed that the reason why the Cape Cranberries were so beautiful in form and color was because they were grown on the seashore among the salt sea sand. This theory is entirely erroneous.

The best lands adapted to the cultivation of the Cranberry are the low swamp lands. Most of the Cranberry bogs of Cape Cod are made on the bottoms of the old Cedar swamps, where they can be easily flowed with water at all seasons. The methods of flowage are various.

Flowage. The advantages of flowing the bogs with water are many, the first of which is the protection given to the young berries from the late spring frosts, and to the mature berries from the early frosts in the fall. A very shallow surface of water will protect the berries entirely from the frost, and not infrequently the flowage of one or two nights will save the entire crop. The natural flowage is the cheapest and best if the bog is so situated that the water may be under perfect control. Very many of the smaller bogs on the Cape are flowed from a reservoir constructed in the ground above the level of the bog. These reservoirs are filled with water from wells dug for the purpose, the water being often lifted by windmills.

Another advantage of flowing is the protection given the berries from the ravages of noxious insects. The principal one of these pests and the most destructive is the miller or fly that deposits her eggs in the full grown berry by penetrating its surface, and leaving the eggs to germinate a small worm, that in a few days' time consumes the center of the fruit. The only remedy for this fly is found in flowing the bogs for one or two days when the miller first appears.

Varieties. There are two of these extensively grown on the Cape. The Bell berry is the best formed, the richest in color, and the finest in flavor, but it requires great care in its cultivation, and is not so prolific a bearer as some others. The early black berry is an excellent variety, and although it does not grow so large as the bell berry, and is not so well formed, yet it is a sure grower and a prolific cropper, and is here cultivated more largely than any other variety.

Preparing the Bogs. The methods of preparing the lands are of great importance. The swamps and bogs are cleared of all trees and stumps, so that the surface can be made as level and smooth as a floor. This is usually done in the winter, when the swamps are partially frozen and when labor is at the cheapest. This surface is next covered over with sand to the depth of twelve or eighteen inches, and where convenient the shore sand is preferable. Coarse sand is better than fine. Good coarse sand is often found in the hills near the bogs.

The cost of preparing these bogs varies in different localities, and varies according to the price of labor. On Cape Cod the cost of preparing their bogs is about $200 an acre, which price includes the clearing of swamps, the covering with sand, and the setting of the plants. There are bogs costing $300 an acre where the sand is brought from a distance.

Planting. When the bog is fully prepared, then the surface is marked off in rows from twelve to eighteen inches apart. The plants are then set in their places by the use of a sharp-pointed stick, which is used to make the hole in the ground.

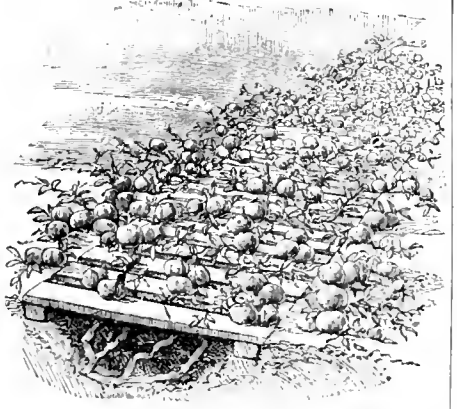
The plants are prepared for setting by passing through an old-style hay cutter, with a knife moving up and down cutting the plants into the desired length, say four to six inches long. After the plants are set, which is usually done in the spring of the year, they need to be thoroughly cultivated and kept clear of weeds and grass until the vines entirely cover the ground, which ordinarily takes from two to three years.

After that there is little to do but gather the crop, unless the owner wishes to increase his crop or raise his bog to the highest standard of productiveness. If so, he will need to cover the vines with sand about one inch deep as often as once in every five or six years. This gives new life to the plants and increases their productiveness. There are bogs which have not been dressed or cultivated for upwards of twenty-five years which gave abundant crops, but these bogs have layers of muck underneath, very deep and rich.

CONDENSED CLEANINGS.

New Styles of Fruit Packages. Of the twenty-five styles of packages, large and small, which Mr. Marvil is now making, the aggregate number of which exceeds five millions annually, we had time to examine but two, the half-barrel vegetable package and the new style Peach-basket. The former is simply an ordinary Peach basket on a larger scale with "lifts" on the sides for convenience in handling and a cover which is instantaneously fastened on by means of wires. The cover is made of slats which with the open sides ensures perfect ventilation, and the flaring sides prevent the vegetables from settling together, as the weight rests chiefly on the sides. Proof of this is seen in the fact that a bottomless package can be lifted full of vegetables with the dropping of only a few from the bottom. The new Peach basket is a happy thought. The basket is square instead of round. It is of the same height, has the same flaring sides and holds the same as the five-eighths basket, and while the top is just one foot square, the round basket is fifteen inches in diameter. This means that a car capable of containing 600 of the round baskets will hold 900 of the square, thus saving one-third of the freight charges to market. This is enough to bring them into favor at once; but a moment's reflection serves to show that a large number of baskets sitting side by side in the wagon, on the pavement or in the storehouse will present an unbroken face of solid mass of color which will add much to the general appearance. The result will be just as in the case of the round berry baskets finally yielding to the square.—Delaware Home and Farm.

The Honeysuckle. There is no more available ornamental vine to-day than the Honeysuckle. Its propagation is attended with less annoyance than any other plant, if we bear in mind the important fact that it decidedly dislikes heat. Their hardiness is unquestioned; our native species being found far northward, especially in the mountain districts. For increasing our stock of plants, all that is necessary is to make the young wood into cuttings, say three or four inches long, and place them in shallow boxes of well-pounded sand, any time during autumn, to remain undisturbed until planting time in spring. The particular point in the operation is that the air should be preserved, cool and moist, say from forty-five degrees to fifty degrees. The moment we admit heat to them their doom is sealed. Layering in the open air is very well for procuring a few plants. The frequent presence of mildew on the foliage of our native Woodbine, and the ever-blooming variety (monthly) is owing in a great measure to our hot, dry climate. Those most free from disease are the Japanese Halliana and evergreen Japonica. Both are strong, vigorous climbers, producing an abundance of beautiful fragrant, flowers. A new hybrid, introduced under the



Tomatoes in Trenches.

name of Lonicera Heckrotti, is a charming vine, with large healthy foliage, and an abundance of bloom lasting until freezing weather. The old favorites, Red and Yellow Coral, are not so satisfactory as in years past, owing to the prevalence of mildew on the foliage, consequently the growth is impaired.—New York Tribune.

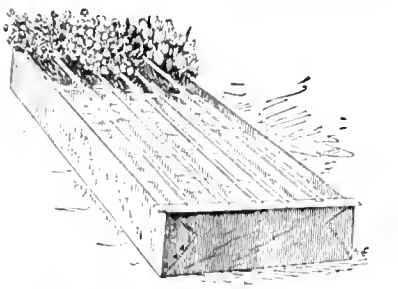
A Cheap Country Paint. The paint has but two parts, both cheap materials, being water lime or hydraulic cement, and skimmed milk. The cement is placed in a bucket, and the skim milk, sweet, is gradually added, stirring constantly, until just about the consistency of good cream. The stirring must be thoroughly done to have an even flow, and if too thin the mixture will run on the building and look streaked The proportions can not be exactly stated, but a gallon of milk requires a full quart of cement, and sometimes a little more. This is a convenient quantity to mix at a time for one person to use. If too much is prepared the cement will settle and harden before all is used. A flat paint brush, about four inches wide, is the best implement to use with this mixture. Lay it on exactly as with oil paint. It can be applied to wood-work, old or new, and to brick and stone. When dry the color is a light, creamy brown, or what some would call a yellowish stone color, a very good color for a country building. A pigment-like ochre may be added to change the color, but it is very difficult to do the mixing so thoroughly as to give an even tint. If attempted, the cement and coloring matter, in carefully weighed proportions, should be first run through a paint mill. This skim-milk paint, well mixed, without added color, has a good body, gives a smooth, satisfactory finish on wood or stone and wears admirably.—Alvord in American Cultivator.

Improving the Native Blueberry. I have worked with my father on Blueberries for eighteen years. Having an old bushy pasture thickly matted with the low-bush berry, we trimmed out everything else and burned it over. The sprouts started up again thickly, but of course there was no fruit till the second year. We found it necessary to trim up again in the fall and have continued to cut out every bush except a low-bush Blueberry every fall since. The expense of this work has been about $6 per acre. We found it best to burn every third or fourth year, and as this made a barren year we divided our ten-acre lot into two sections and alternate the burning. The work has produced immense berries. I have frequently laid one on my thumb-nail which was large enough to cover it. Last season we sold in the Quincy Market, Boston, 2,639 quarts for $577.17, or an average of a trifle over twenty cents per quart. The first were picked June 27, and the last August 4. We have found it best not to pick too closely, but to stop early in the season. We transplanted into richly cultivated land, but with no success. The burning should always be done when the ground is wet or frozen, letting the fire just singe the land, otherwise great injury will result. Careful picking is an essential part, and any picker who shows wet or jammed berries should be discharged.—S. S. S., in N. E. Homestead.

Pinching the Tips not a Help. I made the experiment on two rows of Christiana Melons. In one of the rows I pinched the tips of every runner as soon as it attained the length of one and a half to two feet. The other row was not pinched at all. On August 15 I counted on the pinched row 97 fruits exceeding three inches in diameter, and 85 on the unpinched row. As to the earliness of the two rows, the first fruit on the unpinched row was ripe August 26, and that on the pinched row August 27. I made a similar experiment with the White Spine Cucumber, the two rows each containing 52 plants. The runners were kept carefully pinched as fast as they attained the length of two or three feet. During the first fortnight after the vines commenced bearing, the vines on the pinched row gave decidedly the larger yield. Later, however, the case was reversed. The average shows that the yield of the two rows was very nearly equal. Thus, the pinched row yielded during the season 2,115 pickles, which weighed 36 pounds, while the unpinched row yielded 1,901 pickles, weighing 36 pounds, 15 ounces. We could hardly have expected two rows similarly treated to yield more nearly equal results. It will be noticed that the pickles on the pinched row averaged smaller in size than those of the unpinched row. E. S. Goff.

Perfume Making in the South. Mr. J. A. Storck, a chemist of New Orleans, says: Right here in the Southern States, and especially in Louisiana and Florida, we have in abundance the most important adjuvant known to the perfumer's art, namely, the Orange tree. This most important tree yields three oils—one from the flowers called neroli, one from the leaves called petit grain; another from the rind of the fruit called portugal or orange; and the water used in the process of distilling the oil from the flowers is sold under the name of Orange flower water. In the three cities Grasse, Cannes and Nice, in the South of France, over 3,000,000 pounds of Orange flowers are used annually to manufacture oils, pomades, etc., and used principally in perfumery. The value of this enormous amount of flowers is about $300,000. There is land enough to raise Orange and other trees in Louisiana alone to supply perfumes for all the world. Then again we have any amount of Jasmines, Tuberoses and the Rose, and I will add among others the Magnolia and Violets. I have prepared floral pomade from the flowers above mentioned on a small scale, by absorption, and found them to equal the French pomades of the same odors.

The Roadside. The owner of a farm who permits the road that runs through or along his



Keeping Cut Flowers in Water.

land to become unsightly with the wild growth of trees or weeds injures the value of his farm. Keeping the roadside in a neat condition will add considerably to the value of the land. The trees should be trimmed to present a neat appearance and certainly to prevent the limbs from being in the way of travel. We have all seen roads on which this was not done. Cut down and grub up the useless growth. Pay particular attention to the weeds that may grow. Weeds ripening their seed upon the roadside are not only unsightly, but they mean additional expense in cultivating the farm another year. It costs something to destroy weeds. It costs a great deal to destroy them. Just as they begin to ripen their seed go out with a scythe and cut them down. It will be some of the best work that is done on the farm.—Western Rural.

Keeping Cut Flowers in Water. The advantage and benefit of keeping all cut flowers with stems of some length in water is obtained without the use of innumerable jars and pots by some large eastern growers, by the use of galvanized iron pans about six inches deep, over the top of which is laid a rack of slats to hold the flowers in an upright position and to keep the kinds separate. The illustration gives a good idea of the pan, with some flowers placed in one end. Successive cuttings can be placed in front of the others until the pan is full. Cross slats could be used to subdivide the pans into more numerous and smaller compartments if to be used for a larger number of different kinds of varieties.—American Florist.

Tomatoes in Trenches. A simple and very useful method of growing Tomatoes in the open air is practiced by Mr. J. Forbes in the gardens at Rochampton. On a sheltered plot of ground sloping sharply to the south a trench is dug about 4 feet wide, as if preparing to grow Celery on the bed system, and strong Tomato plants planted in suitable soil at the proper time. The trench is covered with rough open lattice work, through which the plants grow and are trained down to it. With attention to thinning the growth for the admission of sun to the fruit ripe Tomatoes in abundance are produced in summer in the manner represented in the engraving.—Journal of Horticulture.

Saltpetre Solution. One teaspoonful in a pail of water. A pint poured around each hill of Cucumbers or Squashes is very good for the plants and very bad for the bugs, both striped and black, which burrow at night in the earth about the plants. Cut worms also are said to dislike earth treated with saltpetre. This is a remedy which certainly would be very useful to the plants, and if, as claimed, it destroys or keeps away insect marauders it will prove most valuable. Bulletin Vermont Experimental Station.

Fitting Bones for Fertilizer. Strong lye will rapidly disorganize bones, especially if boiled in the lye; the ossein or organic matter of bones is rapidly dissolved and they become brittle. If wood-ashes cannot be got in sufficient quantity, bones may be fitted for use as fertilizers by breaking into coarse fragments with a hammer and then boiling them with a mixture of salsoda, caustic, lime and water. The ordinary carbonate of soda or salsoda ought not to cost more than 3 or 4 cents a pound when purchased in quantity. Three pounds of salsoda and two pounds of caustic lime boiled up in two gallons

of water will make a solution that will rapidly act on broken bones when boiled with them. When the bones are well softened and brittle the whole mass may be mixed with eight or ten times its volume of dry muck, or turfy mould, and thoroughly mixed, when a valuable manure will be secured. The potash of wood ashes, moreover, is more valuable as manure than soda. —Dr. Kedzie, Michigan Agricultural College.

Window Plants. Drainage is necessary for success in the growing of plants in window boxes as well as every place else; therefore see that a sufficient number of holes are made in the bottom of the box to allow the water to pass off freely, and before putting in the soil place a piece of potsherd, or something similar, over each hole, then some coarse material for about two inches; above this place the soil—which may be any rich, sandy soil having considerable leaf-mold mixed through it. It requires to be rich in plant food, as the plants have to get their main supply of food from it for the whole season. Where there are windows having different exposures, a good variety of plants can be employed. As for those having a southern exposure, plants requiring a sunny position can be used; while in such as have a northern aspect, plants requiring shade can be used. A window-box, if not well filled with plants, has not much beauty in it, nor is a box filled with unhealthy plants very attractive.—Country Gentleman.

Care of Grafts. Even before grafts open their buds there will be found other shoots issuing from the stock below the graft. The rising sap enters these channels more readily than in the somewhat dried-up cells of the graft, with the line of separation left by the knife to be bridged over; and if the volunteer channels are not suppressed or reduced in time the graft may starve. Usually, however, if in good sound condition and well set, it gets some share of the sap, its buds open, and its amount of growth depends largely on its being protected from its greedy competitors. In order to secure its full growth and the proper ripening of its wood, the wild shoots should be rubbed off as soon as they first show themselves and before they are in leaf. To let them grow to some length and then suddenly break them off is injurious.—New York Tribune.

Melons. The seeds should be soaked for three days before planting, in a solution of chloride of lime. Rolling land with southern exposure is best adapted to their growth. Thoroughly rotted hog manure, incorporated with the soil and leaf mold, or composted earth, for the hills, which should be two feet in diameter and eight feet apart, and when finished only level with the surface of the earth. When the plants come up, and before they run, the land should be thoroughly cultivated and worked, and later the weeds pulled up.—Farmers' Home Journal.

Tree Agents. Despite all their failures and short comings they have been a blessing. They have traversed the width and breadth of the land, and all over the country may be seen the outcome of their labors in the blooming orchards, beautiful front yards, luxuriant small fruit gardens, and bright rosy cheeks of the rising generation. The fruit tree agent has been one of the most important factors in the development of horticulture and deserves the respect and gratitude of every man, woman and child in America. —Elmira Husbandman.

Insect Friends. California fruit growers have recently imported some Australian parasites warranted to kill fruit pests. These little bugs, no larger than fleas, feed on insect pests and rapidly destroy them. Congress will be asked to sanction the importation of these parasites, in order to clear California orchards of various insect pests that are increasing every year—American Cultivator.

Disposing of the Tap Root. Dr. Bowen years ago in experiments in planting the nuts and seeds of our native forest trees learned that if a board be placed in the bottom of the trench in which the seeds are planted, the would-be tap-root will be turned from its downward course and will become more fibrous, making a better tree to transplant. New England Farmer.

Early and Late Corn Together. Abner Hollingsworth plants early and late varieties of Sweet Corn in alternate hills. The early sort does not take much room, and is out of the way when the later kind begins to develop and needs all the space. Farm Journal.

Transplanting the Arbutus. I have transplanted it in early spring just after the flowering is over many times with success. A trowel or spade is run down well around the plant, so that a good ball of earth comes with it. Sturdy, small, bushy plants are the best. Of course, a shady place should be selected for it. I once set a plant among some rocks in a hollow, shaded by trees; another time at the foot of a small hillock facing north, in both of which situations it flourished.—Meehan in Garden and Forest.

A Pretty Device. One of the prettiest hanging baskets I ever saw was made by rolling a big bunch of Sphagnum into a ball. It was then wrapped with fine copper wire, one end of which was left long to hang it by. By means of sharp-pointed sticks cuttings of *Tradescantia zebrina* were inserted all over the ball. It was well soaked in water and hung in a shaded greenhouse. In a few weeks the ball was entirely hidden, and the effect was very pretty.—American Garden.

It Will Pay. It takes nerve to spend time and money to set trees and shrubs about the house, put a neat fence around the yard, and paint the farm buildings, but it makes home more beautiful, the family happier, and greatly enhances values.—The Farmer.

Beans and Bugs. For keeping the striped bugs off Melon vines plant three or four Beans in each hill, and pull them up when the vines get too large for the bugs. —Farm and Fireside.

There isn't wisdom enough, put it all together, to tell what makes one Apple sweet and the next one sour.—The Century.

Encourage the Boys to it. Ownership of a garden promotes temperance, as idleness supports the saloon. —N. E. Farmer.

Toads are the policemen of the garden.—Orchard and Garden.

More Grapes, more health.—Phila. Record.

Vegetable Products on the Table

Fried Cucumbers. Spice, sprinkle with salt and pepper, dip in egg, then in cracker-dust; fry brown.

Berry Dumpling. One quart of berries, two cups of flour, one egg beaten very light, a little salt, and milk enough to wet it up well. Pour into a buttered dish and boil two hours.

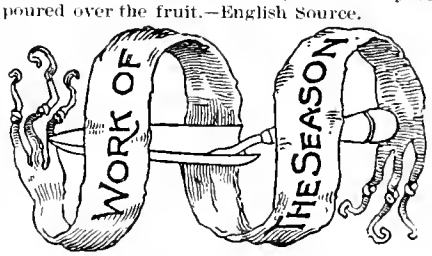
How to Can Pie Plant. Strip off the skin from the stalks and cut up in small pieces as for stewing. Pack the can as full of these pieces as possible, and fill it with cold water. Screw on the cover and it will keep a year.—S. C. Fairbanks.

Lettuce Salad. Two or three heads of Lettuce, yolks of two hard-boiled eggs, one lemon, one tablespoon salad oil, one tablespoon grated horseradish, one tablespoon sugar. Arrange the Lettuce loosely in a dish. Rub the yolk of the egg smooth in the juice of the lemon, add the other ingredients, mix well, and pour over the Lettuce just before serving.

To Cook Green Peas. This vegetable is so often injured in cooking that we add a few hints to young housekeepers. Use as little water as possible in cooking, only enough to prevent their burning. Cook from twenty minutes to half an hour according to the size of the Peas; Peas that require to be cooked for an hour, or require sugar or soda to make them tender, are too old for the table. Salt Peas and all vegetables when half done, not at first, as salt hardens the water and hinders the process of cooking.

Artichokes. Pare and wash about two pounds of Artichokes, taking care not to touch them with a steel knife or fork in paring or washing, or they will turn black; boil until soft, about twenty minutes is sufficient. They should be well covered with water or they will turn black. When they are soft, pour off the water, and mash them with a little milk or cream. Take a small pie dish or basin, and put a layer of the Artichokes, then a layer of the bread-crumbs, a little butter, and pepper and salt, and go on till the dish is full. Put into the oven, and bake about three-quarters of an hour.

Fruit Compote. In making one, of whatever sort of fruit, the idea is always the same. The syrup should be made first of white refined sugar and water, and when this is clear and thick, the fruit, already picked, should be put in gradually, and simmered gently until it is soft, without being broken. The time required will depend of course, upon the nature of the fruit; the soft sorts, as red Currants or Strawberries, needing only a few minutes, the harder sorts requiring a longer time. So, also, the quantity of sugar to be used varies, very acid fruit needing, of course, more sugar than does sweet fruit. In all cases, however, care must be taken not to put in too much sugar. The charm of a compote of fruit is that the natural flavor of the fruit is retained in it, and when over much sugar is used, there is only a general lusciousness and no refreshing flavor. It must also be remembered, that whilst it is very important that refined sugars should be employed, it is more likely that the syrup will be clear and bright if the sugar be in small lumps rather than in powder. When the fruit has been simmered softly in the syrup till it is tender, it should be lifted out gently with a spoon, and placed in a glass dish. The syrup should then be boiled very quickly again until it is thick, and allowed to cool, when it may be poured over the fruit.—English Source.



HOUSE PLANTS.

Abutilons or Flowering Maples in pots should now be encouraged by repotting as they will bear, to make strong growth for sustaining winter flowering. Prune freely to promote shapeliness.

Agapanthus Plants need plenty of water while flowering, being by nature sub-aquatic.

Bouvardias. Plants designed for winter bloom to be kept cut back closely for the present.

Cactuses during their flowering and growing period are not apt to be given too much water.

Cyclamens for flowering next year and later should have the seed sown during the present month.

Fuchsias succeed well as bedding plants in situations sheltered from heavy winds and bright sunshine. Those that have recently commenced blooming are good for this purpose. They require a light, rich soil. The red spider, its chief enemy, should be kept down by frequent syringing or sprinkling of the foliage. To plant out in the North by June 1st is early enough.

Geraniums. Where plenty of winter flowers are wanted, the plants should be grown in pots during the summer; also, keep the flower buds closely nipped out. The Rose species and most other sorts can be brought along finely for house decoration later, by lifting some from the border some time this month and potting. Pinch back the main shoots a little at the same time.

Hydrangeas in bloom are benefited by an occasional dose of manure water. Young plants, in their first year especially, like partial shade in the summer.

Insects. As to these, one should put prevention before cure. Aid plant health by proper watering, cleansing the foliage, removing dead leaves and matured flowers, and repotting as needed, and insects will not trouble much. As stragglers appear, apply the thumb nail.

Lantanas embody a number of good qualities as pot plants. They may easily be grown as standards, with a trunk three or more feet high, by keeping all side shoots down during the season of growth, and until a desirable height is reached.

Mignonette Seed, if not yet started for winter plants, must now go in. See under "Conservatory."

Oxalis rosea and other varieties should receive less water than when they were flowering freely.

Pomegranate. As this plant's season of bloom is near at hand, better encourage strong growth by mild applications of manure and water.

Primroses. See directions given for Calceolarias.

Primroses, Double Chinese. The treatment now needed is merely that they be kept in a cool, shady place, and water as required, that is, sparingly.

Stake Fuchsias, Cobaeas and other plants now making a rapid growth promptly as needed.

Vallotas now begin to bloom. While this is going on they should be kept constantly well watered.

Watering cannot now be neglected once without serious results. The best time of the day to water in the summer is towards night. Then the plants have moisture and coolness until morning. But if plants happen to be dry in the morning, don't wait for evening but water immediately.

Window and Veranda Boxes. These now require much water. Enough must be given each time it is needed to soak the mass of earth to its very center. Many suffer extremely because this is not done, the attendant judging that because the surface is wet there is water enough.

Winter-flowering plants, such as Begonias, Chrysanthemums, Carnations, Poinsettias, Heliotropes, Roses and Myosotis, ought now to be growing rapidly, and will require pinching back every few weeks to promote stocky forms. Such as are in pots should be shifted into pots one size larger as soon as the roots mat about the ball of earth.

LAWN AND FLOWER GARDEN.

Annual flowers now come in. It is a mistake to allow the plants to become crowded. Thinned out properly, and many kinds that often appear no better than weeds develop into handsome plants.

Asters are gross feeders. If this fact was not duly appreciated when the beds were made, they may still be helped by liquid manuring or a manure mulch.

Balsams should be pruned of many of the young shoots that now appear; train to one, three or more main shoots and their appearance will be improved.

Candytuft, if sown during this month in frames, will produce heavy crops of blooms just after the open air yield is cut off by frosts.

Carpet beds are now in full dress, and to keep such as are very thickly set to plants in the best appearance through the hot weather they need a thorough watering once a week, and all useless flowers, as well as unhealthy leaves and weeds, should be removed as often. Some of the plants will need trimming also, to regulate shape.

Climbers now push ahead rapidly, and should be amply furnished with supports for the young shoots, and have the growth regulated.

Dahlias that produce many side shoots are benefited by having some of these cut out.

Layering is a means of propagation that every amateur ought to be familiar with. By it about all fine shrubs and plants can easily be increased, while many cannot be propagated in any other way. In the operation a depression is made in the earth at one side of the plant in which to bend a vigorous shoot. This shoot should have a notch cut in from the top, one-third of the way through at the lowest point of the bend. Bend it down and cover firmly with mellow earth. In about two months there ought to be good roots.

Pansies. Sow now for early spring forcing.

Perennials, Hardy. If it is desirable to increase such kinds as ripen their seeds this month the seed may be sown as soon as ripe. Those that are through flowering should have their flower stalks cut away soon after for the sake of neatness.

Rhododendrons. Remove seed pods and sprouts.

Roses to be gone over once a week for keeping down strong shoots and cutting off bad flowers.

Staking and tying up are important operations to keeping a handsome garden. Strong-growing, top-heavy plants like Dahlias, Gladiolus and Salvias absolutely demand it for the best results. Large single specimen plants, such as Hydrangeas, Geraniums, etc., may be staked so neatly, by lowering the top of the stake down into the plant, that these will not show and yet obviate all danger from breaking off or bending over by storms.

Sweet Williams and other biennials should be sown for next year's blooming.

Trees that were planted in the spring often suffer from drought in the summer. A mulch of hay, litter or stones over the roots is good treatment to prevent this, and better than excessive watering.

Variegated trees or shrubs, or those with cut or other "fancy" forms of leaves which may show signs of a common type of foliage should have the shoots on which these appear cut out, or the future value will be in danger.

Walks should, above all else, be kept clear of weeds and litter. Keep the edges tidy. Roll after heavy rains. To sprinkle them in hot weather tends to the making of a cool garden.

Watering flower beds may do when owing to drought it is really necessary, but not otherwise. If the plants stand closely this may be necessary, when with more space it would not be. If watering is to be done, let this be very freely at the time, calculating on not soon repeating the job. It is a fact that many summer flower beds are injured by over-watering.

Weeds and Weeding. A good gardener suffers little from weeds; he tills the soil of the borders and beds so often and so well that the weeds hardly exist at all. In caring for our borders, aside from using the narrow rake and hoe combined, referred to last month, we find no other tool so useful for stirring the soil around and under plants as the weeding hook one was figured on page 189 June issue). By stirring the surface of the beds after each shower, taking out the few small weeds that may show up, it becomes a pleasure to care for the beds completely.

PLANT CULTURE UNDER GLASS.

Camellias. The buds of next winter's flowers have now been formed, and any bad treatment to the plants may cause these to drop before opening, as explained last month. Keep the Camellia apartment cool by shading, sprinkling and free airing. Water regularly and syringe the plants at least three times a week. Some growers put the red-flowering kind outdoors in a shady place, and then spread the whites over all the space under glass.

Chrysanthemums in pots may have their final shift. Sprinkle often from overhead. The stronger and more vigorous the plants are the greater the amount of sustenance that they will require in the shape of watering. Now that the pots should be getting fairly full of roots they are best plunged in ashes, as then the temperature of the roots is more equable, and they are less likely to suffer through want of water.

Cinerarias and Calceolarias. Prick out the seedlings as soon as they can be handled, into pots or pans, placing these in frames under shaded sash. Admit air and water as required.

Cyclamens. See brief note under House Plants.

Euphorbias. If spring-struck cuttings are now in 6 or 7 inch pots these will be large enough even for three or four plants. The fact is that if this plant is assisted as it should be with manure water, with concentrated manure sprinkled on the soil, it will do better and bloom more profusely than if large pots are given, as it is a spare rooting subject. It does not like much pot room, but will bear an unusual amount of high feeding. The plants are better not stopped, keeping the heads always near the glass in a warm house.

Ferns. It must be seen to that large growing kinds in the Fern-house do not too much crowd or overshadow the smaller kinds. Tree Ferns, if much encouraged through giving them ample root-space often soon get so large as to be useless. It is better to have rather small pots or boxes, giving some liquid manure.

Mignonette for winter blooming is usually not grown early enough. The seeds should go in during June or early July, sowing directly into small pots, three or four seeds in each, the seedlings then later to be thinned down to one. The young plants should from the first be protected from the Cabbage worm butterfly with mosquito netting.

Orchids should now be provided with a free circulation of air to ripen the spring growth. Use as little shading as possible, and keep the air moist by watering the paths and stages in the afternoon, after which shut up for the night.

Poinsettias. Where very large heads of these plants are wanted, spring-struck plants should be kept on growing in heat. Older stock will do cooler; but both should be kept with their heads close to the roof. Seven-inch pots will do for this year's plants, if they are well supplied with manure.

Potted plants of Heliotrope, Sweet Alyssum, Begonias, and like kinds, designed for winter flowers, should be shifted promptly on, as required.

Roses for winter flowers, that are bedded out under glass should now be at rest, receiving only enough water to not allow entire dryness of the soil.

FRUIT GARDEN AND ORCHARD.

Aphis or Lice yield to kerosene emulsion or soapsuds if applied with force, repeating the operation as needed.

Currants. Where there are but few bushes the birds are sometimes troublesome. Mischief by them is easily prevented by throwing netting over the plants. An old article past use at the windows will answer here.

Layering of Currants, Gooseberries, Grapes, etc., may now be done. See under "Lawn and Flower Garden."

Liquid Manuring. If the soil about trees and plants is somewhat poor, applications of liquid manure to the roots will help the crop greatly.

Mildew on Grapes may be eradicated by the use of powdered sulphur, applied with a bellows, or even thrown in fine clouds with the hand when the leaves are wet. This needs prompt attention; mildewed vines do not ripen their fruit well.

Mulching. Many have yet to learn the great value of summer mulching in certain cases. There are instances where it will induce a stronger growth than a coat of manure would. Very helpful to newly-set trees, the stone fruits, and to Currants and Gooseberries.

Pruning. The best pruning is that which rarely, if ever, calls for the removal of a large branch. As shoots start up, pinch them away where no branches are wanted, and leave others where desirable. The latter will grow the faster for the absence of the former.

Slugs on Cherry, Pear and other trees to be destroyed by dusting with dry ashes, lime, or earth.

Strawberries. Where new plantations are to be made a great gain comes from layering the young plants, which form at this season, into pots, or on pieces of inverted turf four inches square, set into the ground. The plants, by either course, may then be set out in August, and will give a good crop next year.

Thinning. It *does* pay to thin fruit. The work is something, but that is about saved in the latter operations of picking and sorting, while thinned fruit always commands high prices. In Peaches the rule is to leave never more than two Peaches on a shoot six inches long, while one would be better, or three on a limb a foot long. Pears and Apples usually are allowed one apiece to nine spurs. In no tree should fruit clusters be allowed to remain unthinned. Leave the spaces throughout the tree as evenly divided as possible. Grapes are also benefited by thinning. Even thinning on the bunch of such compact-growing kinds as the Delaware and Diana is a good plan, removing about one-fourth the berries.

Wasps often injure fine specimens of fruit. This may be prevented by inclosing in gauze bags.

THE VEGETABLE GARDEN.

Bush Beans for a late crop may be sown, as they grow quickly now; a rich, deep soil for tender pods.

Celery. Crispness is promoted by the use of good manure. The soil can hardly be too rich, and free watering is also very beneficial. Planting for the main crop should now be done.

Cucumbers for pickles planted early this month usually do well, but it must be early or not at all.

Herbs. A little before these come into full bloom cut, tie into small bunches and dry in shade.

Lima Beans now push ahead rapidly; let them be tied to the poles as they need. Bearing commences in good earnest only when the tops of the poles are reached hence these must not be too high; eight feet is enough.

Melons making a strong growth should be stopped at one joint past the last fruit about the end of the month, to favor maturing of all the fruit set.

Radishes for use during winter may be sown.

Rhubarb should rest during fruit time.

Seed saving is an important matter. Let the earliest and best specimens be spared for this purpose, marking them to insure their preservation.

Seed sowing of such things as Sweet Corn, Kohl-rabi, Lettuce and Turnips, besides the kinds named under the special heads, is yet in order.

Slugs sometimes prove quite injurious to late planted Cabbage; they can be kept off by putting a handful or two of coal ashes around the stem.

Tomatoes do better staked or trained on a trellise than when spreading over the earth, the fruit being more abundant, finer looking and of better flavor. A single stake will answer, but any simple trellise that will admit of spreading the vines is better.

Turnips should be sown during the month.

Weeds. There is no time like a dry spell for killing weeds. The roots brought up now and they will dry and die, which cannot be said of most of them when wetness prevails.

FRUITS AND VEGETABLES UNDER GLASS.

Grapery. Give an abundance of air to all vines upon which the Grapes begin to color. The vines should be looked over and have all laterals stopped; late ones may be fertilized with manure water. Those late kinds that it is intended shall hang on the vines until Christmas will be improved for having the scissors passed over them to remove all imperfectly fertilized berries. Vines in early and mid-season houses need thorough cleansing as they are cleared of fruit, as the perfect development of next year's fruiting buds depends upon having clean, healthy foliage.

Strawberries. Young plants must now be started in pots for next winter's crop. Fill as many three-inch pots as it is desired to have plants for forcing and sink them to the rim along the rows of stock plants. The earlier this is done after the layers start the better, for the stronger the forcing plants are by winter the better. The layers will need directing to the pots, and can be kept in place by a layer hook, stone, or clod of earth. By keeping the pots well watered they will be rooted in about three weeks. After this place in the shade until the pots are full of roots, when they should be shifted into six-inch pots. Pot rather firmly into good fibrous earth afterwards, standing the pots in an open, airy place, and giving them all the water they need.

Tomatoes are not difficult to force for winter fruit in a temperature of 60°. Seed sown early in this month can be had to fruit in November. The plants should be brought along in pots, starting the seeds in the three inch size and bringing them up to the 10 inch or 12 inch size for fruiting. A light, fibrous soil should be used, and if a six inch potful of bone-meal be mixed into every bushel of soil the plants will be delighted. They cannot bear a sour, stiff soil.

THE POULTRY YARD.

Wire runs for poultry are light, portable, durable, easily made, and show poultry to the best advantage. Dogs cannot get into them, and they are not much more expensive than lath runs.

Coop Guard. The best thing to put in front of chicken coops at night in hot weather is a front made of slats of common laths about half an inch apart, with a stone placed against it to keep it in position. This will keep out enemies and allow good ventilation.—Rural New Yorker.

To Keep Eggs. Hold perfectly fresh eggs in boiling water while counting six. A wire basket can be used for this purpose. Let them dry and cool, then pack in oats. Put a layer of oats on the bottom of the keg or barrel sufficient to support the eggs; pack them closely small end down, cover with a layer of oats and proceed till the barrel is full. Shake it gently to settle oats and eggs firmly. This method has given eggs a year after packing in as good a state of preservation as when first placed in oats.—J. E. F., in Tribune.

Why They Fail. Many seem to think that all that is necessary in order to succeed with poultry is to procure a few birds, provide them with a home, and then gather the eggs! This is only a beginning. Patient, enduring work, is as essential to success in poultry breeding as in any other branch of business. Perhaps more so; for hundreds of obstacles lay in the path of success. Filth accumulates, vermin abounds, disease threatens and the elements are at eternal warfare with the inmates of the poultry yard. The sun, upon whose rays in winter the birds depend for health, in summer becomes a fruitful source of ailments unless the fowls and chicks have shelter from the scorching heat. The rain that causes the welcome grass to grow must not fall upon the partially feathered chicks. Dust baths must be provided; water which the owner would be willing himself to drink must be provided for his fowls, and changed frequently; fresh green food in sufficient quantities to preserve health must be at hand; but not enough should be given to cause diarrhœa. Cleanliness, absolute cleanliness, is the essential to poultry as to human health, and this can only be secured by patient painstaking labor.—Poultry and Pets.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

767. **Nitrate of Soda.** There is much talk of "nitrate of soda" as a fertilizer. What name does it appear under in commerce, as I do not find it in the catalogues? Is it "soda ash," or "sal soda" or "sal nitre?" I don't want the wrong article.—L. B., *New York.*

768. **Maggots in Onions.** I would be glad for information on keeping the maggots from destroying Seed Onions.—T. O. V., *Hamilton, Ontario.*

769. **Soil for Roses.** I am determined to plant some Roses another season despite some say they will not succeed in my soil, which is of a gravelly nature. What advice can you give on preparing it? Would the "sandwich style" of layers of rotten manure and soil eighteen inches deep be a good plan.—M. M. G., *Tioga Co., Pa.*

770. **Raising Liliums From Seed.** Last year I saved some Lily seed, but which I neglected to sow out of ignorance as to how to proceed. Desiring to save seed again this season, I would be glad for information on sowing the same.—MRS. K., *Bangor, Maine.*

771. **Sowing Wallflowers.** Will some reader give instructions for raising these old-fashioned pot plants and oblige AMATEUR?

772. **Strawberry Runner Cutting.** Is there not some device for expediting the cutting of Strawberry runners? By answering you will oblige C.H.R., *Erie Co., Pa.*

773. **Indelible Ink for Zinc Labels.** Can an ink be readily prepared that will be indelible on zinc labels? If so, how?

774. **Curled Leaf on the Peach.** I send samples of curled leaves taken from my Peach trees, and which I desire to know the cause and cure of. The leaves in time fall. Is it the fault of the soil or the culture?—W. L. R., *Douglassville, Ga.*

775. **Mushroom Culture.** (*a*) Can Mushrooms be grown in a semi-dark cellar? (*b*) Can they be grown there in winter without artificial heat beyond the manure, the cellar never freezing? (*c*) How often must the beds be made over and the spawn be renewed?—E. A. W., *Chicago, Ill.*

776. **Improving Tankage.** Will ashes or lime increase the value of tankage from [we presume meat] packing houses?—J. K. H., *Independence, Iowa.*

777. **Propagating Clematis.** Would you favor reader in the methods of propagating this interesting class of plants?—MAY.

778. **Bark Lice on Apple.** I enclose some Apple twigs that are affected by a scale-like insect. I can find no remedy in my horticultural reports, so I look to you for aid.—S. C. L., *Huron Co., Mich.*

779. **Best Keeping Grapes.** Will some of your readers who have tested the relative value of different Grapes for winter keeping tell a young grower which are the best among standard varieties for the purpose?

780. **Summer Pruning for Raspberries.** Which is considered the best, pinching or not pinching the canes of this fruit in summer?

781. **Ants in the Greenhouse.** These insects have proved a great trouble here of late. What would you consider the best course to eradicate them?—J. G. S., *Camden, N. J.*

782. **Aphis on Cherry and Plum.** How can my trees be ridden of this pest?—M., *Alton, Ill.*

783. **Old Cucumber Seed; Why the Best?** Generally the advice is given to sow fresh seed; why then is old seed of Cucumbers considered the best?—LEARNER, *Georgetown, D. C.*

784. **Unpruned Roses.** We have seen the course of never pruning Hardy Roses recommended,. What is generally thought of the plan by Rose growers?—C. A., *Providence, R. I.*

785. **Night Soil and Sewage.** What is considered to be the value of this for fertilizing purposes as compared with ordinary barnyard manure? I refer both to the solids and liquids as they would be taken from a tight vault.—W. R. L., *Miami Co., Ohio.*

786. **Nitrate of Soda—Ammonia Salts.** Such frequent reference is made to these articles for fertilizing purposes that I wish some one would tell us more about their true value.—W. R. L., *Miami Co., Ohio.*

787. **Salt for Quince, etc.** Is salt of value for Quince or any other trees?—C. D., *Orange Co., N. Y.*

788. **Manuring for Strawberries.** I desire to plant Strawberries somewhat largely but am confronted with the fact that stable manure is difficult, in fact almost impossible, to procure for liberal use. Has there been any successful experience in this line with the use of other manures that can be reported for my benefit?—A. L., *Crawford Co., Kansas.*

789. **Fuchsias in Pots.** Will some reader kindly tell me the best compost for pot Fuchsias?—F. W. W. D.

790. **Hen Dung for Gardens.** I would be glad if some reader who has had experience in the matter, would tell me the best way to apply fowl manure for the cultivation of both vegetables and flowers grown outdoors or in pots. My garden has been neglected, and is infested with wire-worms. How can I exterminate them?—E. A. N., *Madison, Wis.*

791. **Perennial Phloxes Dying.** Some of my plants of Hardy Phloxes have died before my eyes, and I cannot account for it. Will some one advise?—E. A. N., *Madison, Wis.*

792. **Culture of Day Lilies.** Will any one inform me how I should proceed in the culture of Day Lilies (*Hemerocallis*)? Few, if any, of my plants succeed.—Q.

793. **Market Hydrangeas.** In the market I see Hydrangeas with only one stem and a large head of flowers upon them; they are grown in 5 inch pots. Probably some city florists understand the system adopted and could tell me how such are grown, when the cuttings should be taken, and how they are managed. I have tried it but failed.—STEWARTON, *Nebraska.*

794. **Gooseberries Mildewing.** My Gooseberries have mildewed badly in past seasons. If there is a method of treating them to prevent this I should like to learn of it.—CHARLES W. T., *Berrien Co., Mich.*

795. **Asparagus Turning Green.** How can white Asparagus be prevented from turning green when standing a day or two after cutting?

796. **Copperas.** What value has it as a plant stimulant? How to use on Potatoes?—PATRON.

797. **Rust on Raspberries.** How to get rid of it?

798. **Roses from Cuttings.** Will some one please tell how to raise Roses from cuttings without a greenhouse?—S. E. SUANTON.

799. **Worms on Grape-vines.** How shall I keep the worms from eating them up? London purple and Paris green do no good.—E. P. FISHER.

800. **Coal Slack for Heavy Soil.** (*a*) Will it pay to haul soft coal slack two miles to mix with a heavy garden soil that bakes when it rains to lighten it, or would it pay better to haul sand four miles? (*b*) Does the slack contain any plant food at all?—W. D. HILLS.

801. **Fir Tree Oil.** What is it?—A. J. P., *Oneida, N. Y.*

802. **Cultivating Native Cherries.** Are not the best of the native black sand Choke Cherries worth cultivating?—F. K. P.

803. **Transplanting Tree Pæonies.** In what month do Tree Pæonies transplant best?—F. K. P.

804. **Setting out Strawberries.** Can I plant field grown plants by July 15th, on rich piece of ground, and have them bear next season, or will it be necessary to get potted plants?—W. D. K. LEE.

805. **Removal of Large Limbs.** (*a*) How large limbs may be safely removed from sound fruit or ornamental trees if scars are well protected? (*b*) What month is safest to cut off in? (*c*) What is the best covering for large wounds? The plague of forks splitting down in high winds leads me to ask.—F. K. PHŒNIX.

806. **Mulberry Dropping its Fruit.** A Russian Mulberry five years old has blossomed for three years, but as soon as fruit forms it drops off. What remedy?—W. T., *Sangus, Mass.*

807. **Clematis in the Nursery.** What per cent of first and second year Clematis re-set in nursery will survive the third year? With me many die off in summer from fungus.—F. K. PHŒNIX.

808. **Increasing Amaryllis Johnsonii.** My plant ten years old has never showed increase, how to be treated for effecting this?—S. T. WHITE, *Brooklyn, N. Y.*

809. **Quantity of Paris Green and London Purple.** How much should be used per gallon of water for Potato bugs, Rose slugs, etc.—H. C., *Ironton, O.*

810. **Greenhouse Building.** Please give practical information in regard to greenhouse building and heating.—GEO. B. RICHARDS, *Buchan, Mich.*

811. **The Cinnamon Rose.** (*a*) Where can it be obtained? (*b*) Is it known by any other name?—MRS. S. B.

812. **Black Spot on Roses** What is it and how remedied?—HENRY FRAIL, *Fredericks, Md.*

813. **Stove Plants.** What are they?—S. B.

814. **Forcing Roses in Succession.** Would it pay to force American Beauty Roses two winters in succession without rest except by picking buds off in summer?—H. F.

815. **Works on Botany and Greenhouse Plants.** Please recommend a good book on Botany to learn thoroughly, and one for culture of all kinds of greenhouse plants?—E. L.

816. **Water in Pipes in Summer.** Is it good to let the water run out of the greenhouse pipes in summer?—EMIL LANGE, *Sharon, Pa.*

817. **Black Ants.** How shall I rid my garden and orchard of these; they nip off Currants also Gooseberries after fruit is formed and quite a size. I have tried pickle and have poured paraffine on the hills and set fire to them without success.—F. S. H., *N. S.*

818. **Insects on Grapes.** How shall I prevent attacks of the bee, when in flower, later the wasp which cuts off the stem, and then the small insect about the size of a flea?—FRED. S. HILYARD.

819. **Tan Bark Ashes.** Is ashes of spent tan-bark a good fertilizer for Onions? If so how to be applied?—P. B., *St. Francis, Wis.*

820. **Hardiness of Roses.** Will the Rose Ball of Snow and the Polyantha Roses stand the Michigan winters?

REPLIES TO INQUIRIES.

753. **Removing Soot from Evergreens.** We have never had to employ any special means to remove soot from Evergreens, as we have generally found, however thickly coated they were, that the heavy rains washed it all off. The only remedy that we could suggest is to dissolve a little soft soap in warm water, syringing it well on to the foliage whilst warm, and then an hour or so afterwards, thoroughly washing this off with water through a hose. The soft soap will loosen the sooty matter and make it come off more easily.

760. **Killing Quack Grass.** Quack Grass (*Triticum repens*) generally called Couch Grass, but also Witch Grass and Twitch Grass, is one of the most difficult to eradicate by ordinary means. There is one sure means, however. Plow the sod near five inches deep. This will give a chance to cultivate a good tilth on top. Then every ten days shave the surface clean with a sharp plow, unless you have a cultivator that will cut every inch of the soil. Continue this plowing every ten days through the season, and the couch grass will be dead unless it may be so wet a season as to interfere with plowing. A naked summer fallow will kill any plant, if it be so thorough that the green leaves cannot appear above ground, by preventing growth of roots, and this grass lives and increases by means of its creeping roots.

761. **Cats and Gardens.** I beg to offer the following suggestions on this matter: Procure some empty lobster tins, make four or five holes through the bottom, and tie inside of the tin a piece of nice meat or cooked herring, and lay the tins in the garden. Do not be surprised if you see some of the cats crowned with lobster cans in the morning. Give them a gentle bath of cold water, etc. Then take hold of the can and pull it off. Away runs pussy. Throw the can after her, and lay a few lobster cans in the garden, and I guess pussy will remember the "bonneting" she experienced, and will fight shy of lobster cans in future. The cans fit better if they are rough.—J. H.

768. **Maggots in Onions.** It is much to be regreted that no remedy which may be called satisfactory is known for destroying this insect. The application of soot or lime to the soil, for rendering it distasteful to the maggots has often been recommended, and its use sometimes appears to check their ravages, but that is as much as can be said for them. The somewhat dangerous (because both explosive and poisonous) and abominably smelling drug known as bisulphide of carbon has been used with effect against this pest according to report. This is applied by puncturing the soil where Onions are to a depth of two or three feet, the holes four feet apart each way, and pouring an ounce or more of the bisulphide into each. But this would not be practicable except on a very small scale, owing to the costliness of the drug. The best course of all to pursue is a frequent change of location for the beds. It has been found that by moving the plantation for half a mile from an old affected one, there being an orchard between the two sites, has been the means of securing freedom from its attacks.

769. **Soil for Roses.** Gravelly soils are naturally of a hungry character, and therefore will take a good liberal dressing of manure. Dig it fifteen inches deep only, placing at the bottom of the trench from four to six inches of manure. Do not mix any of the latter with the upper soil, but after the digging is completed, get a few loads of turf parings, road scrapings, or ditch scourings, and spread this over the surface, afterwards working it well amongst the other soil with a fork. This will be a better plan than the "sandwich style," which does not suit Roses.—A. G.

770. **Raising Liliums from Seed.** If you had sown the seed as soon as it was gathered in a mixture of sandy loam or leaf mold kept uniformly moist in a box, or covered with sphagnum in a frame, then placed the box in a warm frame in spring, you would have gained time. With the new seed we advise you to take such a course. The chief point is to maintain constant and uniform moisture in the soil, as if it gets dry now and then, even for a short time, germination, which is slow, will be materially retarded if not prevented. You give no idea of your culture conveniences, therefore we are unable to give information precisely applicable to your case. Some of the seed may germinate this summer, especially in a moist warm frame, but the whole of it may not do so till next spring. You had better therefore not disturb the soil till then, and the plants that appear this season may be left to grow in the box. A cool frame will be suitable for seedlings in summer, or the box may be stood in a shaded place outdoors, such as behind a wall, in hot weather the soil being liable to get too dry in the full sun.

788. **Manuring for Strawberries.** As one instance of the successful culture of Strawberries without the use of stable manure we may mention that of Hale Bros. the successful fruit growers of Connecticut. We are assured that they never apply barn-yard manure directly to their Strawberries. They plant Corn a year or two to clean the land and then sow Rye, which they plow under. This is followed by heavy applications of bone dust and ashes, when the plants are set, followed in summer with nitrate of potash. The results are very fine berries. We are acquainted with a large grower in this state who applies no manure except very freely as a top-dressing and mulch in the winter.

782. **Strawberry Runner Cutter.** Some of the weed hoes and cultivators made have a circular cutting wheel attachment which with being set to run near the row just ahead of the hoe blades

makes a clean job of cutting the runners at each side of the row. The same idea may be carried out in an independent implement for the purpose, and which may be easily made at home, by the blacksmith's aid. For this procure a piece of flat steel such as an old saw blade, or the blade of an old steel shovel, out of which a wheel six or more inches across can be cut. Make the wheel with a beveled edge and grind this down sharp. A half-inch hole must also be drilled through the center to receive a bolt that is to serve as an axle. Make a handle of a light piece of hard wood four or five feet long, three inches wide at one end and tapering to an inch wide at the other. To the side of the wide end attach the wheel knife with the bolt, having the latter pass through the handle and secure it with a nut. By keeping the knife sharp, the boys will enjoy trundling the wheel, and do effective work cutting runners.

785. **Night Soil and Sewage.** The composition of human excrements as compared with the mean composition of the excrements from farm animals so far as the more important fertilizing constituents are concerned is according to Prof. Wolff as follows:

One ton (2000 lbs.)	SOLIDS.			URINE.		
	Nitrogen.—lbs.	*Phosphoric acid.—lbs.*	*Potash.—lbs.*	*Nitrogen.—lbs.*	*Phosphoric acid.—lbs.*	*Potash.—lbs.*
Human	20.0	21.8	5.0	12.0	3.7	4.0
Mean of horse, cow, sheep, and swine	9.4	6.2	4.3	22.5	0.4	25.4

One ton of fresh faeces contains more than twice as much nitrogen, and more than three times as much phosphoric acid, as a ton of fresh mixed animal dung. The nitrogen, too, is probably in a more available condition than that in common barnyard dung; and we should not be far wrong in estimating 1 ton of faeces equal to 2½ tons of ordinary dung.

787. **Salt for Quince Trees, etc.** Those who have used salt about the Quince are of the opinion that it affects the soil favorably, as it seems to reduce the freezing of the ground, and is supposed to furnish some food. We have been informed by Mr. Smith, the Geneva nurseryman, that he applies salt to Quince, Pear, and Plum trees, to drive away the Curculio, before the leaves come out; to do so after leafing would kill the leaves. A mixture of salt and ashes applied to soil is believed by some practical fruit growers to have value for mitigating the effects of drought.

794. **Gooseberries Mildewing.** In the culture of the Whitesmith and other foreign kinds, as well as our own, for fifteen years, I have never suffered from mildew. On some of my older plants I have got half a bushel of perfect fruit each. I use salt freely on the soil. On the rows that I have had the best results, the salt has been used most abundantly. Wherever mildew has put in an appearance at all it has been on young plants that have not received salt. All of my older plants have had salt for the last ten or twelve years. On some new plants that had never been salted until last year I put two barrels of salt to 300 bushes. I have heard others speaking of losing their bushes from applying salt. I never have lost any; one must be careful. In applying as soon as the soil is ready to work I fork it up, and then put on of old rotten manure all I can afford, and on that I put the salt and allow it to remain on the surface until the rain washes it in.—Geo. Mahen, *Mercer Co., Pa.*

734. **Filberts** should be planted with the rows eight to ten feet apart with the bushes four to six feet apart in the rows. They should bear in from two to four years. They have not been found hardy in the Northwestern States, and East they should have a cool moist situation on a north hill side. North, a very careful selection of the best wild Hazel Nuts from the woods of the neighborhood would perhaps give the most satisfaction.—D. B. W.

783. **Indelible Ink for Zink Labels.** No such ink is really needed, because with using an ordinary pencil on zinc the writing will after a time become distinct and indelible. Still we give our correspondent the following receipt which we have seen published but have never tried:—One dram of verdigris, one-half a dram of lump-black, one of sal-ammoniac powder, mixing them together with ten drams of water.

774. **Curled Leaf on the Peach.** This ailment affects Peach trees now and again but we are not aware of its ever having done serious damage either to the trees or the fruit. It is probably bacterial in its origin, and is more apt to come where the trees are on wet, heavy land, and in warm dry seasons. It comes in the fore part of the season and is known by the leaves swelling and curling, and becoming thick with puffs of a reddish color on the upper side. They drop off in about three weeks and new leaves come and take their places, and the tree apparently forgets the trifling annoyance. Thorough drainage with proper culture are looked upon as being all that are necessary to meet the trouble.

783. **Old Cucumber Seed; Why the Best?** The superiority of old Cucumber seed to new can be explained on scientific principles: when fresh they are fleshy, and contain pabulum which gives vigor to the young plant at the expense of the fructifying powers; but with age they get rid of the surplus food. Cucumbers and Melons from old seed fruit a great deal better than from new; they are shorter jointed, and flower at the third or fourth joint, while if the seed were fresh they might not until the tenth joint.

782. **Aphis on Cherries and Plums.** We have had two severe outbreaks of aphis on our Cherries and Plums. Those in the open have been clean throughout, those close to buildings badly attacked. There happened to be at hand a bottle of dissolved gum-arabic. A little of the gum was poured into a can and diluted with water, so as to be quite thin. With a soft brush the tops of the trees were quickly brushed over with gum on both sides, the Aphides being, of course, on the underside. The cure was complete, not a leaf was injured; and the job was quickly got through. A man brushed the tops of twenty Plum trees in but little over an hour. The event reminds me of an outbreak of blue fly on some Plum trees a few years ago, which I noticed when the glue-pot was on the fire for some odd bit of carpentry. I poured some of the melted glue into a can and watered it down, so as to be quite weak and yet moderately sticky. With this I quickly brushed the tender tops of the trees, annihilating the vermin and without harm to a single leaf. If the sticky stuff is strong it kills the leaves, but if weak it does no more than make them shine, and the vermin perish the moment it touches them.—Shirley Hibberd.

789. **Fuchsias in Pots.** Fuchsias will grow well in almost any moderately light and rich compost. A very suitable mixture consists of turfy loam, three parts; old flakey hot-bed manure, one part; leaf-mold, or decayed hops, one part, and a sprinkling of coarse sand, crushed charcoal, and some good fertilizer. The compost should be thoroughly mixed, but not pulverized, or rubbed down more than is really necessary, for the Fuchsia, like many other plants, prefers a somewhat rough and porous soil to one that is fine in character, and, therefore, apt to become "pasty" when wet. The larger the plants, the rougher should the compost be, and for 10-inch or 12-inch pots we should use a quantity of rough lumps of turf and rotted manure. Pot somewhat firmly in all cases, and for large plants use a rammer, and make the soil quite hard. Plenty of fine Fuchsias are grown both well and quickly in little but leaf-mold, but loam gives a plant with more substance.—A. H. E.

790. **Hen Dung for Gardens.** This is an excellent manure either for the flower or kitchen garden. If it is used for pot plants, the best way is to dry it (if it is wet), and break it up into a state of powder, and use a 9-inch potful to a barrow-load of mold. For all out-of-doors crops spread it on the surface of the ground thinly, as it is almost as rich as guano, and dig it in in the usual way. The wire worms are very difficult to eradicate, and there is no better plan than putting slices of Potatoes or Carrots on the end of pointed sticks and placing them 3 inches or 4 inches underneath the surface of the ground; the wireworms are attracted to them, and may be destroyed. The baits should be inspected daily.—A. H. E.

733. **Soft Shell Almond.** The culture of the Almond is exactly the same as that of the Peach, except that the tree is not quite so hardy to withstand cold, and it blooms very early in the spring, therefore its bloom is liable to be destroyed by spring frosts, and should have a high situation on a rich, dry, warm soil. The Hard Shell Almond is somewhat hardier than the soft. They should do fairly well in Virginia on sandy, high lands. Here in California they do finely on the "thermal belt of the foot hills," where there are no spring frosts, and we have no Plum Curculio to injure the fruit. It is a sure and profitable crop. D. B. W.

756. **Propagating Magnolia Grandiflora.** So soon as the seed is ripe, which may be known by the seeds protruding from the cones and hanging from them by the "umbilical cord," they should be gathered, washed free from pulp, and placed in boxes in moist sand and kept in a moist and cool place until spring, keeping the sand all the time moist, covering the seeds from an inch to an inch and a half deep. The sand should have some vegetable mold in it, and should be six to eight inches deep. So soon as the weather is warm in the spring, set the boxes in a warm, shaded place. The young plants must be kept shaded the first season and constantly moist. When the seedlings have made three or four leaves, the boxes may be plunged in the soil in a shaded, sheltered place. In this California climate the seedlings should be sheltered from the dry east and north winds. If the seed is good this plan should grow seedlings. The second season they may be planted in sheltered nursery rows. Where the winters are severe of course the seedlings would need to be wintered in a cool green house. At Santa Barbara an oiled covered pit would perhaps be best. Seed on young, and that from isolated trees would perhaps not be good from want of fertilization.—D. B. Wier.

701. **Cucumber Pickle Making.** Cucumbers fresh from the vines are wiped clean and put in strong brine for nine days. They can be sent to market in brine in whiskey barrels, or drained and soaked 24 hours, changing the water twice, then put in vinegar. Remove all soft Cucumbers, which will spoil the whole. Have a porcelain kettle half full of boiling vinegar, fill with well-drained Cucumbers from the fresh water and let them scald a moment, then lay in a stone jar covered with vinegar spiced, scalded and cooled. It should cover the pickles three inches to allow for evaporation. To each gallon of vinegar add one pod of red pepper, a half teaspoonful of cloves, unground, and three large slices of horseradish, which last prevents scum rising. Pickles in vinegar are usually sent to market in wooden pails, broader at the base, with close cover of wood. Salt pickles for wholesale dealers are sent in the largest sized casks that will hold brine. Very little water is used; the Cucumbers laid in salt make their own brine.—S. D.

697. **Putting up Currants and Gooseberries.** Gooseberry jam is most popular. "Top and tail" these berries, reads the old English recipe I follow, crush them with a wooden spoon in an enameled pan or kettle, and let them boil over a moderate fire five minutes. Put no water to them, but simmer in their own juice. Just as soon as tender add half the weight of sugar, heated in the oven and boil together fast, stirring all the time for five or ten minutes more. Watering fruit on a damp day needs the longer boiling. Cool before putting in jars and seal. Currant jelly is the only sweet worth making from Currants. Pick them in earliest ripeness, as soon as colored, stem and squeeze in a crash bag between boards or in a wooden vise. To every pint measure three-fourths the quantity of sugar, fine granulated preferred, and stir into the juice without cooking at all. Stir till the sugar is dissolved, and set the tumblers filled with the Currant in the sun, covering with pieces of window glass. Keeping in full sun a day or two, and the finest, freshest jelly results.—Shirley Dare.

754. **Blackberry Propagation.** The cuttings can be made any time after the canes ripen, until the ground freezes up. Cut the roots into pieces about two inches long and pack in boxes with sand or light soil. Put the boxes where they will not freeze, so the callousing process may go on all winter. They should have sufficient moisture to keep them from becoming dry, but not too much or the cuttings at the bottom of the box will become waterlogged and will rot. Early in the spring they should be set in light soil that is moderately rich, three or four inches apart, and four inches deep. Have the rows far enough apart so that a horse cultivator can be used. After planting, the land should be rolled to keep it from drying up. If there happened to be a dry time early in the season, some of the plants not having made much root, may die. Should heavy rains occur before the plants up, a steel rake should be passed over the rows to break the crust so the plants can come up easily. Keep free from weeds during the season. I have grown fine plants by the above plan, many of which bore fruit the next season. In the fall the plants are ready to be set in the field. I advise fall planting of the Blackberry, because the first time they fruit I get more than double the crop that I can get from spring set fields.—J. H. Umpleby, *North Evans, N. Y.*

756. **Potatoes Two Crops a Season.** Potatoes will not grow if dug and planted immediately after maturity in the summer. It is said that they will grow freely, however, if exposed to the rays of the sun, in a warm place, as on the roof of a building, for ten days or so before planting. In Tennessee farmers sometimes grow a second crop of fair-sized tubers in this way.—E. S. G.

767. **Nitrate of Soda.** Its proper name is Nitrate of Soda. You should buy it under that name and that only. It is sometimes called Chili Salt Petre or Cuban Salt Petre. But it is now well known to commerce as Nitrate of Soda. We import it annually into this country from the beds on the West coast of South America; about 60,000 tons a year. It is used principally for making Nitric Acid and cheap gun powder and fire-works. It is used only to a very small extent as a fertilizer, and that is the reason you do not find it in the catalogues.

681. **Root-grafting Various Trees.** I have bought Plum on Pear root grafts that did pretty well. Have root-grafted Plum, Pear and Quinces, with varied success. Take the root up in the fall, keep in a cellar in moist sand. In February or March cut the roots in pieces two or three inches, the graft five inches long. Put together in the spliced pear; lay in boxes in sand or sawdust until planting time. I, however, keep budding the Pear, and the Quince grows so readily from cuttings that I will graft no more.

656. **Cleaning Waste Pipes.** I am hardly chemist enough to give information on this subject, but would use salt and vinegar, copperas dissolved in water, forced through the pipes and follow with clean water to rinse it out. A solution of Carbolic acid I know would do it, but might act on the metal some.

Fungus Diseases in Plants.—Their Treatment.

In Circular No. 5 of the Botanical Division of the Department of Agriculture. Prof. Scribner gives the following information:

The diseases in plants caused by fungi are simply the effects produced by other plants of parasitic habits, and we must keep the two—the parasite and the plant attacked—distinct in our minds in our efforts to protect the one from the other.

For some of these so-called diseases there is no remedy but the knife or the complete destruction of the infested plant. It is important to understand the cases of this character, not only that we may avoid wasting time and money in vain efforts to treat them otherwise, but in order that prompt action may be taken and sources of infection be quickly destroyed, for all fungus diseases may be regarded as infectious. Those remedies or preventives which have apparently yielded positive results are here enumerated together with directions for their preparation, etc.

Fungi living within the tissues of the host must be prevented from gaining an entrance to these tissues; fungi which live upon the surface of plants or having their bodies soon exposed through the breaking up of the epidermis, like the Apple scab fungus or the fungus of bird's-eye rot of Grapes, may be treated for cure.

Destructive treatments are available between the periods of vegetation (winter season), and consist in destroying all infectious material and in washing the plants to be protected with strong caustic solutions, *e. g.*, solutions of sulphate of iron or copper and sulphuric acid.

During the growing season the strength of the solutions used is governed by the power of the green plant tissues to resist their action. In the early part of the season while the shoots and leaves are yet tender, weaker solutions than those which may safely be applied later in the season, must be employed. Sulphur alone, applied when the weather is very hot and the sun bright, may cause a burning of the foliage. The same is true of sulphatine and also of eau celeste.

Avoid making the applications excessive; do not drench the plants with the fluids nor plaster them with the powders. With a suitable spraying apparatus, which projects a fine, mist-like spray, merely wet the plant surfaces, and employ bellows which will discharge the powder evenly and in such a manner that the plants may be enveloped in a cloud of dust, which, settling upon all parts, becomes just perceptible.

For small plantations and general vineyard use, the knap-sack form of sprayer, having the reservoir and pump combined, to be carried on the back of the operator, is the best. For spraying fruit trees more powerful appliances are required.

Nixon's Climax nozzle is excellent for spraying clear liquids, but its use demands considerable power in the pumps.

The Vermorel modification of the eddy-chamber or cyclone nozzle is a most excellent pattern for both clear and pasty or thick liquids. The degorger combined with it renders the spraying of the latter possible.

LIQUIDS.

Simple Solution of Sulphate of Copper.—For treatment of downy mildew and oidium of the vine. For treatment of downy mildew and black rot of the Grape.

Dissolve 1 pound of pure sulphate of copper in 25 gallons of water.

Simple Solution of Sulphate of Copper.—For soaking seeds previous to sowing to destroy the spores of smuts.

Solution in water, 5 to 8 pounds to 10 gallons.

Copper Mixture of Gironde, Bordeaux Mixture.—For treatment of mildew. For downy mildew and black-rot of the Grape. For blight and rot of the Tomato and Potato.

Original formula.—Dissolve 16 pounds of sulphate of copper in 22 gallons of water, in another vessel slake 30 pounds of lime in 6 gallons of water. When the latter mixture has cooled it is slowly poured into the copper solution, care being taken to mix the fluids thoroughly by constant stirring. It is well to have this compound prepared some days before it is required for use. It should be well stirred before applying. A solution containing the ingredients in the following proportions has been recommended for general use: Sulphate of Copper, 4 pounds; lime, 4 pounds; water, 12 gallons. The copper is dissolved in 16 gallons of water, while the lime is slaked in 6 gallons. When cool the solutions are mixed as described above.

Knapsack Apparatus with Bellows, for Powders used in the Vineyards of France.

Eau Celeste, Audoynaud Process.—For downy mildew. For treatment of downy mildew and black-rot of the Grape. For treatment of mildew and anthracnose. For blight and rot of the Tomato and Potato. For Apple scab.

Dissolve 1 pound of sulphate of copper in 2 gallons of hot water; when completely dissolved and the water has cooled, add 1½ pints of commercial ammonia (strength 22 deg. Baume); when ready to use dilute to 22 gallons. The concentrated liquid should be kept in a keg or some wooden, earthen or glass vessel.

Modified Formula.—Sulphate of copper, 2 pounds; carbonate of soda, 2½ pounds; ammonia (22 deg. Baume), 1½ pints; water, 22 gallons.

Dissolve the sulphate of copper in two gallons of hot water, in another vessel dissolve the carbonate of soda in a similar manner; mix the two solutions, and when all chemical reaction has ceased add the ammonia; dilute to 22 gallons.

Solution of Ammoniacal Carbonate of Copper.—For peronospora of the vine.

Prepared as follows: Into a vessel having a capacity of two quarts or more pour one quart of ammonia (strength 22 deg. Baume), add 3 ounces carbonate of copper, stir rapidly for a moment and the carbonate of copper will dissolve in the ammonia, forming a very clear liquid. The concentrated liquid thus prepared may be kept indefinitely. For use dilute to 22 gallons.

Sulphate of Iron.—For anthracnose.

Simple solution in water 4 to 8 pounds to the gallon, to be used only as a wash.

Sulphide of Potassium, Liver of Sulphur.—For mildew in greenhouses. For mildew on Roses. For oidium and erinose of the vine. For Orange leaf scab. For Celery leaf blight. For Pear and Apple scab.

Solution in water, ¼ to 1 ounce to the gallon.

Solution of Hyposulphite of Soda.—For Apple scab. For Celery leaf blight. For Orange leaf scab.

Simple solution of 1 pound of the soda in 10 gallons of water. Must be used at once.

Liquid Grison. Eau Grison.—For mildew on Grape vines. For powdery mildew.

Prepared by boiling three pounds each of flowers of sulphur and lime in 6 gallons of water until reduced to 2 gallons, when settled pour off the clear liquid and bottle it. When used, mix 1 part of the clear liquid in 100 parts of water.

Milk of Lime.—For peronospora of the vine. For anthracnose.

Simple solution in water, 2 to 6 parts lime to 100 parts water.

Phenic Acid, Carbolic Acid.—For powdery mildew of the vine.

Solution in water one-half pint to 10 gallons.

POWDERS.

Sulphur.—For Grape mildew. For powdery mildew of the vine.

Sulphur and Lime.—For treatment of anthracnose during the growing season.

A mixture of equal weights, sulphur and lime.

Blight Powder and Sulphur.—For simultaneous treatment of oidium and the downy mildew. For downy mildew of the vine. For Tomato and Potato blight and rot.

Prepared by thoroughly mixing from 3 to 8 pounds of anhydrous sulphate of copper with 90 to 100 parts of flowers of sulphur.

Sulphatine, the Estève Process.—For the treatment of mildew. For the treatment of downy mildew and black-rot of the Grape. For the treatment of the Tomato and Potato for blight and rot.

Mix 2 pounds of anhydrous sulphate of copper with 20 pounds of flowers of sulphur and 2 pounds of air-slaked lime. The proportions may be varied.

Skawinski's Powder.—For simultaneous treatment of oidium and downy mildew of the vine. For treatment of mildew.

Mix 22 pounds of finely-powdered sulphate of copper with 33 pounds of soot or alluvial earth and 165 pounds of coal dust.

Sulfosteatite or Cuprique Steatite.—For the treatment of mildew (*Peronospora*).

An exceedingly fine bluish powder composed of steatite, or tale, and sulphate of copper, the proportion of the latter substance amounting to about 10 per cent. Very easily applied; this is considered the most adherent of all the powders used for these purposes.

David's Powder.—For downy mildew and black-rot of the Grape. For mildew and anthracnose.

Dissolve 4 pounds of sulphate of copper in the least possible amount of hot water, and slake 16 pounds of lime with the smallest quantity of water required. When the copper solution and slaked lime are completely cooled mix them together thoroughly; let the compound dry in the sun, crush and sift. Apply with a sulphuring bellows of some description furnished with an outside receptacle for containing the powder. The copper coming in contact with the disease will very soon destroy it.

Podechard's Powder.—For the downy mildew of the vine. For the treatment of mildew and anthracnose.

Air-slaked lime, 225 pounds; sulphate of copper, 45 pounds; flowers of sulphur, 20 pounds; ashes, 30 pounds.

Dissolve the sulphate of copper in the water; when thoroughly dissolved pour the solution upon the lime, which is surrounded by the ashes to keep the liquid from spreading; after twenty-four hours add the sulphur, thoroughly mix the compound, ashes and all, and when dry sift through a sieve with meshes of one-eighth of one inch. This preparation may be made several months before it is required for use.

Condition of the Fruit Crop.

The condition of the fruit crop of America, as reported by 192 correspondents of POPULAR GARDENING and FRUIT GROWING, about June 20, is set forth on this and the next pages. The report will, we think, strike the reader as being remarkable for its conciseness and clearness. By reading down the columns the general state of the crop of each kind of fruit for all sections of the country where fruit culture receives attention may be seen at a glance. The reliability of the report is vouched for by the names of the correspondents, all of which are printed. To our correspondents who have thus kindly co-operated with us we extend our hearty thanks.

A computation on the basis of this report shows that all fruits together, the crop over the country, is about an average one, to be exact, just a shade below average. But the more important fruits of a large section, namely, Apples, Pears, Grapes, Raspberries, and Strawberries, show a little above an average crop. The same is true of the fruits most largely used for evaporating purposes. Following is the average showing of each kind of fruit for the entire country, the figures corresponding with those named under the Explanation at the head of the report, of which 3 indicates an average crop:

Apples, Early	3.63	Pears Late	2.50
Late Apples	3.15	Plums	2.85
Cherries	2.40	Quinces	2.70
Grapes	3.52	Raspberries	3.34
Peaches	2.04	Blackberries	3.50
Pears, Early	2.39	Strawberries	2.99
Currants	2.96	Gooseberries	3.04

A general average for any state or section may easily be obtained from the figures of the report.

THE COMPLETE GARDEN.

XVII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 207.

THE APRICOT.

This delicious fruit, which follows closely the Cherry in its season of ripening, stands between the Peach and the Plum in character, but is earlier than either. In leaf and stone it resembles the Plum, in form and flower the Peach, having the bloom on the fruit also of the latter. In hardiness it about equals the Peach.

Soil and Situation. The soil of the Apricot must be deep and dry. With these conditions met it will succeed in either heavy or light soil, provided the trees be worked on Plum stocks for heavy soil and on Peach stocks for light soil, both forms of which can usually be had of nurserymen. Being rather susceptible to injury from cold, the trees should be given a site somewhat sheltered, or should be planted against buildings and trained fan-shaped against the surface. One of the most vigorous and productive Apricot trees the writer ever saw was trained against the south wall of a building, and this in the 43d deg. of latitude.

Varieties. A good selection of six varieties would be the following: Early Golden, Red Masculine, Early Moorpark, Moorpark, Peach, Belda. In many places north where the improved sorts winter kill, the natural fruit raised from seed will succeed.

THE BERBERRY OR BARBERRY.

The fruit of this shrub, which occupies so prominent a place among ornamental growths, is very acid, too much so for eating, but it may be made into an agreeable preserve and jelly, and be used for an ornamental pickle. A light rich soil, together with training the bushes to single stems gives the finest fruit. Easily propagated by seed, layers or suckers. Stock may be had of all nurserymen. The Common or

Continued on next page.

REPORT ON THE CONDITION OF THE FRUIT CROP

From our Correspondents, June 20, 1888.

EXPLANATION: Five indicates a very heavy crop; 4 over average; 3 average; 2 under average 1 poor; 0 total failure. Kinds chiefly grown indicated by full face figures.

EASTERN SECTION.	Apples, early.	Apples, late.	Cherries.	Grapes.	Peaches.	Pears, early.	Pears, late.	Plums.	Quinces.	Raspberries.	Blackberries.	Strawberries.	Currants.	Gooseberries.	Correspondents.
NOVA SCOTIA.															
Yarmouth County	4	4						2		3		4	3	4	Chas. E. Brown.
Mercer "	2	2	2		4	2	2		3	3	2	2			Chas. Black.
CANADA.															
Wentworth "	2	4	1	5	1	2	3	2	1	4	1	3	3	2	Wm. H. Mills.
Lincoln "	3	4	2	4	3	3	3	3	3	3	3	4	4	3	D. W. Beadle.
Lincoln "	4	4	3	3	3	3	3	3	3	3	3	2	3	3	A. M. Smith.
Ottawa "	4	4	4	5				4		5	4	5	5	5	M. Robertson.
Vandreuil "	5	5	2	3				2		4	4	5	5	5	R. W. Shepherd.
Welland "	4	4	3	4	3	4	4	4	3	4	3	1	3	3	E. Morden.
Huron "	3	5	1	2	2	3	4	3	2	3	3	2	4	4	Alex. McDallan.
Rowville "	3			3		3		3							Chas. Gibbs.
Annapolis "	4	4	3					4		3		3	3	4	J. B. Hart.
MAINE.															
Androscoggin County	3	3	2	2		3	3	4		3	3	4	3	2	L. F. Abbott.
Cumberland "	3	3	3	3		3	3	2		3	4	4	3	3	A. P. Reed.
Cumberland "		4	4			3	3	3		4	4	5	5		E. C. Robinson.
NEW HAMPSHIRE.															
Hillsboro County	3	4		2	4	3	3			3	4	4	3		C. C. Shaw.
MASSACHUSETTS.															
Hampshire County	3	3	4	4	4	1	1	3	3	4	3	5	3	3	L. W. Goodell.
Hampshire "	3	3	4	4	4	3	3	4	3	3	2	3	2	3	S. L. Maynard.
Bristol "	4	4	2	4		4	3	3	3	4	4	4	4	3	G. B. Durfee.
Suffolk "	5	2	1	3		1	2		5			5	5	3	W. A. Manda.
Plymouth "	4	4				2	2					4	2		Ira Copeland.
Worcester "	3	3	2	3	3	2	2	2	3	3	3	4	2	2	W. H. P. Shrewsbury.
Middlesex "	3	3		2	0	3	3					3	4		W. C. Jennison.
Middlesex "	5	5		4	2	4	2	1	5	3	4	4	5	5	B. J. Smith.
Middlesex "	4	4	3	3	2	2	2	4	3	3		4	4	4	Jas. F. Hyde.
Middlesex "	3	3			1	4	4					4	3		Warren H. Manning.
Norfolk "	3	3	2	4	3	2	2	3	3	3	4	2	4	3	Horace Eaton.
Norfolk "	3	1	1	1	0	2	2	2	3	2	3	4	3		Consider Southworth
RHODE ISLAND.															
Providence County	3	4	1	3	3	3	3	3	2	4	3	3	3	2	Joseph H. Bown.
Providence "	0	1	3	4	0	0	2	0	0	4	3	4	3	0	J. Erastus Lester.
CONNECTICUT.															
New Haven County	3	3	1	4	3	2	2	1	0	2		3	2	1	A. J. Coe.
Hartford "	2	2	4	3	2	2	3	3	3	4	4	3	3	3	S. B. Keach.
Hartford "	4	4	4	4	4	2	2	4	3	3	4	4			T. S. Gold.
Litchfield "	2	4	1	5	2	2	3	4	4	5	5	1	5	5	J. H. Hale.
Middlesex "	2	2	1		3	1	1	1	2	3	3	3	1	2	P. M. Augur.
Middlesex "	2	2	0	2	1	1	1	0	0	1	0	1	3	0	H. L. Stewart.
Tolland "	2	3	2		2	3	3			4		2	3	3	Wm. H. Yeomans.
New Haven "	2	2	1	3	2	1	1	2	4	2		2	3	3	C. P. Lines.
NEW YORK.															
Wayne County		5	3	3	2	2	2	5	4	3	3	2	4		David Lake.
Wayne "	4	4	3	3	4	3	3	4	4	4	4	3			S. J. Rice.
Wayne "	4	4	1	3	4	1	1	5	3	4	4	3	3	3	W. L. Deveraux.
Wayne "	3	3	2	4	4	2	1	4	5	5	4	4	3	3	D. S. Shourds.
Wayne "	4	4	3		5	2	2	4	4	4	4	4	3	3	B. J. Case.
Wayne "	4	4	2	2	3	3	4	4	3	3	3	3	3	3	Oscar Weed.
Ontario "	3	4	1	4	2	1	1	2	1	1	1	1	2	3	Wm. Sessen.
Ontario "	3	4	2	3	4	2	2	5	3	2	3	3	3	3	E. S. Goff.
Ontario "	4	4	2	3	4	2	2	4	5	4	3	4	2	2	M. H. Beckwith.
Ontario "		4	1	1	3	3	4	4	4				4	2	S. D. Willard.
Niagara "	4	4	3	3	2	3	3	2	3	3	3	2	2		J. E. Perrigo.
Niagara "	2	5	3	5	5	3	5	5	3	3	3	2	3	3	Henry Lutts.
Niagara "	4	4	4	4	2	4	4	3	3	4		2	3	3	H. D. Munson.
Niagara "	4	4	3	3		3	2	4	4	3		3	3	3	B. W. Clark.
Niagara "	4	4	3	3	2	2	3	2	2	2	2	2	3	3	Geo. H. Moody.
Niagara "	3	3	4	3	4	3	2	3	3	3	3	1	3	3	E. Moody & Sons.
Tompkins "	2	3	4	1	3	4		3	3	3	2	3	3	3	J. P. Roberts.
Tompkins "	4	4	2	4	0	2	1	3	5	4	4	4	3	2	P. B. Crandall.
Tompkins "	3	3	1	3		1	1					3	4		A. N. Prentiss.
Chautauqua "	3	2	4	4	0	2	2	2	3	2	3	2	3	3	S. S. Crissey.
Chautauqua "	3	3	3	3	3	3	3	3	4	3	4	3	3		E. H. Pratt.
Cayuga "	2	3	1		3	3	3	3		3		3	3	2	J. J. Thomas.
Cayuga "	2	2	3	4	3	2	2	3	3	4	4	2	3	3	H. S. Anderson.
Cayuga "	4	4	3	4	5	4	4	4		4	4	3	4		D. M. Dunning.
Livingston "	2	2	1	5	2	2	2	2	3	4	4	2	3	5	Mrs. L. D. Elder.
Erie "	3	4	3	4	0	3	3	3							G. Zimmerman.
Broome "	2	2	2	1	1	2	2	1	1	3	3	3	2	2	J. G. Orton.
Monroe "	4	4	2	5	3	3	3	5	4	4	5	2	5	4	C. A. Green.
Monroe "	5	5	2	4	4	2	2	3	3	3	3	2	3	3	P. Barry.
Monroe "			2	3	4	2	2	3		3		2	1		Joseph Harris.
Ulster "	3	3	0	2	1	1	1	1	4	2	3	2	3	3	W. C. Caywood.
Ulster "	3	3	1	3	2	1	1	2	1	3	3	4	3	3	J. Van Gelden.
Ulster "	3	3	1	4	0	1	1	1	4	2	3	4	3	3	H. Hendricks.
Albany "	3	3	2	5	3	2	2	3	3	3	4	3	2	3	J. A. Lintner.
Queens "	2	2	0	3	2	2	2	2	0	1	2	2	3	5	3	Chas. E. Parnell.
Oneida "	1	1	3	4	0	2	2	2	5	3	4	4	5	3	3	E. P. Powell.
Orleans "	2	4	2	3	4	3	3	3	3	3	3	3	2	3		S. C. Davis.
Yates "	3	3	2	4	4	3	3	4	3	5	5	4	5	4	Jewett Benedict.
Yates "	2	3	4	5	2	3	3	3	2	4	4	3	3		J. H. Butler.
New York "	3	4													Josiah Rich.
Orange "	1	2	0	5	1	2	1	0	3	3	2	2	3		W. A. M. Culbert.
NEW JERSEY.															
Atlantic County	3		3		5	3	3			4	3	3			Wm. F. Bassett.
Middlesex "	2	2	1	3	3	1	1	2	3	3	4	2	3	3	Edwin Allen.
Passaic "	4	4	2	5		2	2	5	3	4	5	5	5	5	E. O. Orpet.
Ocean "	4	4	3	4		4	4	3	2	3	4	1	0	0	Robert Fulton.
Union "	2	1	1	3	4	1	0	2	1	2	3	4	3	3	J. R. Stothwell.
Essex "	2	2	1	3	4	1	1	1	4	5	3	2	3	3	E. Williams.
Monmouth "	1	1	3	3	5	2	2	3	3	3	3	2	3	3	David Baird.
DELAWARE.															
Sussex County	3	3		3	4	3	3			3	4	4			Wm. P. Corsle.
Sussex "	0	1	3		5	1	1	0		1	5	5		2	D. S. Myer.
Kent "	4	4	5	2	4					4		1			Wesley Wibb.
New Castle "			3	3	5	2	4		3	5	5	5	3	3	Edward Tatnall.
PENNSYLVANIA.															
Allegheny County	3	3	2	3	4	2	2	5	3	4		1	2	3	Jas. Semple.
Allegheny "	4	3	4	5	5	3	3	3		3	4	3	4	3	O. W. Sadler.
Bradford "	3	3	2	3	1	2	2	3		3	3	3			F. W. Card.
Butler "	2	3	3	2	3	1	1	2	2	4	3	5	3	5	J. W. Phillips.
Bucks "	0	0	0	2	2	2	2	2	1	2	2	2	2	2	Wm. H. Moon.
Chester "	2	2	1	5	3	2	2	2	0	3		4	3		T. K. Eshleman.
Chester "	2	2	1	4	2	1	1	0	3	4	4	4	0	0	Joseph H. Kent.
Center "	2	2	2	4	1	1	1	4	4	3	3	4	3	3	Wm. A. Buchhout.
Franklin "	3	4	3	5	5	3	3	5	4	4	5	5	4	5	E. B. Engle.
Lancaster "	4	4	1	3	4	1	1	1	3	3	3	3	2	2	H. M. Engle.

EASTERN SECTION. (Continued.)	Appl's c.	Appl's l.	Cherries.	Grapes.	Peaches.	Pears, c.	Pears, l.	Plums.	Quinces.	Rasp'b's.	Blackb's	Strawb's	Curants	Gooseb's	Correspondents.
Philadelphia County	3	3	3	3	2	1	1	1	3	3	3	5	3	3	Thomas Meehan & Son
Philadelphia "	2	2	2	1		1	1			3	3		3	3	Wm. Hacker.
Warren "	3	2	2	4	3	0	2	2	1	4	3	3	2	2	2	F. R. Miller.
MARYLAND.															
Berrien County	3	3	2	4	2	2	2	2	3	4	2	2	.	.	W. A. Smith.
DISTRICT COLUMBIA.															
Washington	3	3	3	3	3	3	3	.	3	3	3	5	3	3	John Saul.
CENTRAL SECTION.															
OHIO.															
Belmont County	3	4	5	5	5	3	3	5	3	5	5	3	3	3	E. W. Reid.
Cuyahoga "	3	3	3	5	3	3	3	4	3	3	4	3	4	4	E. H. Cushman.
Cuyahoga "	3	2	2	1	1	2	2	3	4	4	5	2	3	3	M. T. Thompson.
Cuyahoga "	5	3	3	3	3	3	3	3		4	4	3	5	.	Arthur G. Babcock.
Franklin "	.	.	4	3	4	4	4	2	4	1	4	2	3	5	W. S. Devol.
Franklin "	3	3	3	3	4	2	4	4	2	4	4	2	3	3	W. J. Green.
Delaware "	3	4	2	3	3	3	3	1	2	4	4	2	3	3	Geo. W. Campbell.
Erie "	2	2	3	4	2	1	1	3	2	4	4	5	3	4	Chas. Carpenter.
Hamilton "	3	4	5	3	5	3	2	3	3	1	1	2	3	3	Geo. W. Trowbridge.
Lucas "	3	4	3	3	4	4	4	4	3	4	4	3	5	5	W. W. Farnsworth.
Montgomery "	3	3	5	5	1	3	3	4	1	5	5	3	3	3	Wm. Ramsey.
Montgomery "	2	3	5	4	3	4	3	4	4	5	5	3	2	3	N. Ohmer.
Portage "	2	2	2	1	2	1	2	2	2	1	3	3	2	1	Geo. J. Streator.
Portage "	3	3	2	2	1	3	3	3	1	3	2	2	3	2	4	Andrew Nilson.
Summit "	2	2	2	3	1					3	3	3			S. B. Terry.
Summit "	5	3	2	2	.	5	2	2	1	3	4	4	2	1	3	L. B. Pierce.
KENTUCKY.															
Warren County	2	3	4	5	5	3	2	5		1	2	2	.	5	A. D. Webb.
INDIANA.															
Floyd County	3	3	4	2	5	4	4	3	3	3	2	2	5	4	Jas. P. Applegate.
Putnam "	3	2	2	4	5	2	2	5	0	4	2	3	3	4	W. H. Ragan.
Hendricks "	3	3	4	2	4	3	3	4		5	5	3	4	4	Mordecai Carter.
Marion "	5	5	4	5	4	4	4	3	5	4	5	4	5	5	W. H. Laurence.
Marion "	3	3	4	3	4	3	3	4	4	2	2	2	2	3	C. M. Hobbs.
Jefferson "	2	2	5	5	5	3	3	2	2	4	4	3	3	3	Jos. O. Taylor.
Tippecanoe "	4	3	3	4		3	3	4	.	3	3	3	3	3	J. Troop.
Delaware "	4	4	4	5	4	3	3	3	.	3	4	1	3		Granville Cowing.
Wayne "	4	3	4	4	5	4	4	5	5	3	4	2	4	4	J. H. Ratliff.
ILLINOIS.															
Union County	4	4	5	4	5	3	3			2	5	2	.		Mrs. Parker Earle.
Jo Daviess "	3	3	1			2	2	.	3	3	3	3	2	2	D. Wilmot Scott.
Champaign "	3	3	3	4	0	2	2	.		4	2	1	3	3	G. W. McCher.
Champaign "	3	2	4	4	0	4	4	0	0	3	3	3	1	1	T. J. Burrill.
Hancock "	3	4	1	5	0	2	3	2	0	3	2	3	2	5	Jas. T. Johnson.
Hancock "	4	3	0	4	0	1	2	4	2	3	3	3	2	4	A. C. Hammond.
Madison "	5	2	2	4	5	3	3	3	3	3	4	2	2	5	Mrs. M. A. Bucknell.
Madison "	3	4	3	3	4	3	4	5	1	3	3	2	3	4	Wm. Jackson.
Madison "	3	3	4	3	2	.	3	3	3	5	3	2	0	3	E. A. Riehl.
Madison "	3	4	3	4	4	3	3	4	3	4	4	3	3	.	Jno. M. Pearson.
MICHIGAN.															
Berrien County	3	4	3	3	1	2	1	1	2	2	3	2	3	3	Dr. A. Higley.
Wayne "	3	3	2	5	2	3	3	3	4	3	3	5	3	3	Anna Lyman.
Kent "	3	3	4	2	3	2	2	3		3	2	1	2	2	E. E. Skeels.
Jackson "	.	.	.	3	.	.	.	.	.	3	3	1	3	.	M. Harmon.
Lenawee "	2	2	1	4	3	1	1	2	3	2	1	2	.	3	Peter Coller.
Van Buren "	4	3	4	5	5	5	4	5	4	5	4	2	3	4	T. T. Lyon.
Van Buren "	3	3	3	3	3	3	3	5	0	0	3	5	3	3	0	G. C. Lawton.
Kalamazoo "	3	4	4	3	3	2	2	4	4	2	2	1	1	3	J. N. Stearns.
Monroe "	2	2	3	4		3	3			4		2		.	J. E. Ingletritz & Sons
WISCONSIN.															
Milwaukee County	4	4	1							5	3	5	4	3	Jas. S. Stickney.
Walworth "	2	2	0	3		1	1	2		3	3	3	2	4	F. K. Phenix.
Sauk "	3	3		3				2	.	5	4	3	3	.	A. Clark Tuttle.
Rock "	3	3	0	1				3		4	3	5	3	3	B. S. Hoxie.
Dane "	5	3	0					3		5	4	3	.	.	Helen M. Kierstead.
SOUTHERN SECTION															
TENNESSEE.															
Knox County	2	3	3		3			4		3	4	4	4		C. S. Plumb.
Shelby "	4	4		5	5	0	0	2		3	4			4	Chas. L. Pullen.
Gilson "	4	4	4	5	5	5	5	5	1	4	4	2		3	C. M. Merwin.
MISSISSIPPI.															
Oktibbeha County	4	3		5	3	.		4						.	S. M. Tracy.
GEORGIA.															
Macon County	5	1	0	4	1	1	1	1	1	4	5	1	0	0	Samuel H. Rumph.
Rockdale "	3	3	0	3	0	0	0	2	3	3	5	3			J. M. Wellham.
Fulton "	2	3	2	1	2	2	3	3	2	3	4	4	1	1	J. J. Toon.
Richmond "	2	2	.	4	1	0	2	2	0	5	5	2			P. J. Berckmans.
VIRGINIA.															
Fairfax County	2	2	1	5	2	1	1	1	1	5	5	5	5	5	J. Luther Bowers.
Fairfax "	2	3	3		1	4	4	3	3	3	4	5	5	5	D. O. Munson.
Norfolk "	1	1	2	2	2	2	2	2	2	3		2	.		G. F. B. Leighton.
Henrico "	3	1	4	3	4	1	1			3	3	3	.	.	E. H. Bissell.
ARKANSAS.															
Pulaski County	5	4		5	5	4	4	5		2	5	2	.		W. K. Tipton.
Pulaski "	4	4	3	5	5	3	3			4	5	3			E. F. Babcock.
TEXAS.															
Brazos County	3			4	3	5	5	4	3	3	4	3			T. L. Brunk.
Dallas "	4	3	1	4	5	5	5	2		3	5	3			J. R. Johnson.
Grayson "	3	4	3	2	3	2	2	2	3	5	5	5			T. V. Munson.
Washington "	4	3		5	5	4	5	5	.		5	5			William Watson.
WESTERN SECTION.															
MINNESOTA.															
Houston County	3	3		5				2		4	4	3	3	3	John L. Harris.
Hennepin "	3			4						4	3	5	5	4	L. Asire.
Hennepin "	4	4	3	3				5		3	3	4	4	4	S. D. Hillman.
NEBRASKA.															
Nemaha County	4	5	0	4	0	1	1	4		5	5	5	2	3	Robt. W. Furnas.
IOWA.															
Scott County	2	1	0	3	0	0	0	1		3	5	3	1	1	John L. Temple.
KANSAS.															
Douglas County	3	3	0	3	0	2	5	3	0	2	4	3	0	2	B. F. Smith.
Leavenworth "	1	1	1	3	0	1	4	1	1	4	4	4	3	4	J. Stayman.
Riley "	3	3	0	2	0	3	3	1		2	3	3	1	3	S. C. Mason.
MISSOURI.															
Adair County		1	0	3	0	0	0	0	0	3	5	2	0	0	Chas. Patterson.
Callaway "	3	3	4	2	1	3	3	5		3		1			R. E. Bailey.
Jasper "	3	3	3	3	2	2	3	3	1	3	4	4	0	1	Z. T. Russell.
Miller "	3	4	2	3	1	2	3	3	3	4	4	2	3	4	N. J. Shepherd.
Montgomery "	5	5	1	5	4	5	5	5	0	5	4	3	2	4	Samuel Miller.
Greene "	3	5	4	3	1	4	4	3	3	3	4	2	3	3	D. S. Holman.
Jefferson "	3	3	1	3	4	3	3	5	3	3	1	2		1	T. W. Guy.
Jackson "	3	4	2	4	3	2	3	3	2	3	3	3	2	4	L. W. Goodman.
Vernon "	1	4	2	4	2	4	4	5	0	1	5	3	0	2	Jacob Faith.
CALIFORNIA.															
Contra County	3	3	2	5	5		3	3	3	4	3	3	4	3	John Strontzer.
San Francisco "	4	4	4	4	5	4	4	3	4	4	5	5	4	4	D. B. Wier.
Los Angeles "	3	3	.	3	3	2	1	2	3	3	3	3		3	J. S. Calkins.

American Red is perhaps the best for fruit, but all the varieties classed as ornamental shrubs are free fruiters.

THE BLACKBERRY.

This delicious wholesome and productive fruit, which not many years ago was known only as a wild fruit, is beginning to receive the attention it deserves from cultivators.

Soil and Culture. The Blackberry succeeds in any deep well-drained soil. High manuring is not called for, in fact the plant thrives in a wild state in some of the poorest sandy soils. It delights in constant cultivation. The plants may be set in rows six or eight feet apart and three feet apart in the row. Some prefer setting at two feet apart to form a matted row, which is then kept to a foot wide. In the garden they may by attention to keeping down suckers be grown in individual hills at about four by five feet apart. In hill culture three or four young shoots should constitute a hill, treating all besides these as weeds. The culture should be shallow between the plants, and removing all suckers. In this plant the growth of one year bears the fruit of the next. Can be planted either in spring or fall.

Pruning. Blackberry plants are naturally of strong growth, forming long-reaching canes armed with formidable thorns. But with attention to pruning, the plants may be rendered compact and not troublesome. The pruning should be done on the young growth of summer by pinching the upright shoots back when a height of three or four feet is reached, and later the side or lateral branches be stopped at a foot or fifteen inches. Besides this the old canes must be cut out after fruiting. With close attention to inducing a compact form of plant, no stakes or supports are needed for the bushes, but with less pruning such are needed. A good support is found in a row of posts or stakes at sixteen feet apart along the row with a strand of number 12 wire secured to these on each side at three or four feet from the ground, the canes being between the vines; or, more wires on each side may also be employed.

Winter Protection. The canes being liable in many places to winter kill, they should be protected by laying them down at the approach of winter and covering with earth or with sod to the depth of two or three inches. In field culture the work can be rapidly performed by the aid of a plow.

Varieties. Among the older best tested varieties the Snyder is the hardiest, standing almost uninjured where the Kittatinny, Lawson, etc., have suffered severely, but the fruit of the latter is finer.

The Dewberry. This is a trailing variety of the Blackberry, and is best grown in rows six feet apart and the plants three feet in row. The ground should be mulched as in the case of the Strawberry, to prevent the fruit from becoming soiled and gritty.

THE CHERRY.

This is a favorite early home fruit. The trees of the black and heart-shaped varieties are of luxuriant growth, and are much prized for their beauty apart from the useful fruit they bear. Those of the acid and red section are of smaller growth.

Soil and Culture. A deep loam and sandy soil should be the first choice for this fruit, but other soils can be fitted by drainage, deep tillage and manuring to answer its needs. On soil that is naturally very dry the surface should be kept heavily mulched. The safest time to plant the Cherry is early in the spring, late spring planting and fall planting usually being accompanied by the loss of many trees. The Cherry succeeds better about the house or elsewhere in grass than the average of trees. In the orchard it repays for careful cultivation.

(To be Continued.)

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. AUGUST, 1888. No. II.

Augnst—month when summer lies
Sleeping nnder sapphire skies:
Open all the windows wide,
Drink the orchard's fragrant tide,—
Breath of grass at morning mown
Through the leafy vistas blown,—
Hear the clinking of the scythe
Sound mellifluent and blithe.
Augnst, month when everywhere
Music floats upon the air,
From the harps of minstrel gales
Playing down the hills and dales.
August days are guards who keep
Watch while summer lies asleep
—*Frank Dempster Sherman.*

AT LAST. All friends of hortieulture may well rejoice that under the provisions of the post office appropriation bill recently passed by Congress, the postage on seeds, cuttings, bulbs, roots, cions and plants has been reduced one-half, namely, to one cent for each two ounces or fraction thereof. To take effect immediately.

LOUISE BONNE OF JERSEY. An undue regard for novelties, inferior at that, very often, may be the cause for the apparent neglect of this excellent old Pear. In the catalogue of the American Pomological Society, the Louise receives eommendations from thirty-one States, a record excelled by only six varieties among all the sorts cultivated showing a wide-spread value. The other sorts are Bartlett, Angouleme, Seckel, Summer Doyenne, Anjou and Lawrence

A ROYALTY SWINDLE. A reader of Dearborn County, Indiana, reports the case of an agent, representing a firm in Michigan, who is attempting to collect a royalty of eight cents on all the Kieffer Pear trees planted in that section. As there is no such thing as a royalty on the Kieffer or any other Pear, or new product, we can only caution our new readers (for older ones must know this) to be on the lookout against any imposition of this or a similar character. Better do as does this correspondent, get your trees, etc., of a reliable firm, disregarding the extraordinary statements made by agents who are entire strangers.

HIRAM SIBLEY. The death of this man at Rochester, N. Y., which occurred July 11, removes from the business of this life one of its most active and efficient forces. By rare business sagacity he accumulated some millions of dollars, and this he used intelligently and successfully. He was a liberal patron of the university of Rochester, and endowed the Sibley School of Mechanic Arts connected with Cornell University. In the agricultural world, aside from being an extensive seedsman, Mr. Sibley was known as the most extensive farmer in this or any other country. He bought one farm of 50,000 acres in Illinois, besides a tract of 4,300 acres in Cayuga County, N. Y., and smaller farms in many places. Mr. Sibley was eighty-one years old at the time of his death, but active almost to the last day.

Interesting Results from Crossing.

M. H. BECKWITH, ONTARIO CO., N. Y.

For the purpose of studying the immediate effects of the pollen upon the fruit, I pollenized a number of blossoms of very dissimilar varieties, among which were the Gregg and the Yellow Antwerp Raspberries; also, the Gregg and the Caroline.

The seed from the fruits were planted and the seedlings are producing their first crop of berries this season. These plants are very interesting. One from seed of the Gregg, crossed with Yellow Antwerp, is a very vigorous growing plant, very different from either parent in appearance, resembling the habit of growth of the Caroline; the canes are covered with numerous weak, purplish spines. The berries are very large, and similar in shape to the Antwerps; color, a dark, reddish-purple, and are produced in great abundance.

One plant having the same habit of growth has a bright scarlet berry, very similar in shape to the fruit of the Gregg.

There is one plant from the seed of the Gregg, crossed with the Caroline, that resembles the latter in every way except the color of the fruit which is a purplish-red.

Conditions for the Germination of Seeds.

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

A contemporary firm, one of the oldest and best known in the United States, lays down the rule in their seed catalogue, on this subject by saying the conditions necessary for the best germination are "proper temperature, sufficient moisture, and *free access of air.*" To the first two of these rules, every gardener and farmer will heartily assent, but the last is misleading and dangerous: "Free access of air" is ever destructive to the germination of seeds, particularly in our hot, dry atmosphere, and is not necessary to accomplish that end.

For this reason, I have for the past thirty years never lost an opportunity to emphatically advise that all seeds sown, whether indoors or out, should be pressed firmly in the soil, so as to exclude the air, and thus prevent the seed being shriveled and dried to an extent that in four cases out of five would destroy germination, and also in cases where germination does take place, if the soil is left loose, the dry air is often sufficient to shrivel up the young plants even after they have started.

I have written considerable in my time on horticultural subjects, but I have ever believed that my essay on "The Use of the Feet in Sowing and Planting" read before the National Society of Nurserymen, at Cleveland, Ohio, some eight years ago, has been of more value to farmers and gardeners than all else I have written put together. That essay has been extensively distributed during all these years, and has now been read by hundreds of thousands, and I have had more thanks for it from those who have practised its teachings, than for all else I have ever written, for of all climates, ours is such as to make this practice imperative. Millions are annually lost by our farmers and gardeners through ignorance of the importance of this rule in sowing seed. In England and similar climates, the moist temperature and large proportion of cloudy weather make this less necessary, hence the silence of all English writers on farming and gardening on this subject.

The present season, the valnable garden Pea crop in Canada and Northern New York (embracing many thousand acres) is almost a complete failure, owing to an unprecedented drought during May and June; had the Peas when sown been firmed in the soil, by the foot or otherwise, germination would have taken place within five days, without it, (and probably it was done in a single case,) germination could not take place in the loose, dry soil under ten or twelve days, and in the dry, hot atmosphere, it was just delay enough to destroy the crop.

Many cases in point, showing its practical value, occur every season. This last May we planted an acre in rows of a new kind of Lima bean: one row was missed being firmed with the brogan,—while the other rows were above ground in ten days, this unfirmed row took twenty, and would, may be, have failed altogether, had we not had rain. The consequence of this ten day's delay will probably be enough to eompletely destroy the erop from being too late to mature. If "Firm the Seed in the Soil" was conspicuously printed at every cross-road and railroad station throughout the length and breadth of the land, and the advice acted upon, the monrners for loss or tailure of crops by germination would be very few.

Improving Flowers.

JOHN LANE, COOK CO., ILL.

Of the many little things to be observed and done in improving flowers, are first, become familiar with them so that you will know when you see something extra choice,—visit the florists, parks, and gardens, and read the florists papers, study the flowers and habits of the plant, procure and plant the best seed. and test the novelties, watch them as they grow and come into bloom, and when you discover an extra choice flower or a better habit, either mark it for seed or prepare it for removal.

Do not hesitate to remove such a plant at any time,—I am often finding such and at once prepare them for removal, by giving a full soaking of water, and the next day insert the digger, a concaved spade, about the plant and carefully lifting a ball of soil sufficiently large to contain about all the roots, then either potting in a large pot or replanting in a new place, keep shaded, and with soaking waterings for three or four days, the plant will seem to thank you for your attention.

Then in saving seed, select those about the center of the plant with large full pods. Some very full double flowers seed sparingly or none at all, in others the seed may look perfect but be wanting in vitality,—these things may be more or less controlled and the seed improved, of which more anon.

A Fine Rose Garden; Tree Rose Culture.

Examples of the most successful kind of Rose culture by amateurs are not very numerous. When therefore the word recently reached us that Mr. D. M. Dunning's superb collection of Roses, at Auburn, N. Y., was at the height of bloom, and a cordial invitation was extended to us by the owner to see them, we gladly took a run to his place, for we well knew the gentleman to be an intelligent grower of this flower.

Here we found on the ample lawn which surrounds Mr. Dunning's city home a most charming collection of Hybrid Perpetnal and other Roses, growing in beds of various pleasing shapes, and all in that pertect condition of health and development which indicates the presence of a master cultivator. By the kindness of the owner we were permitted also to have photographs taken of

several of the beds, and these we have had engraved for the benefit of our readers.

Mr. Dunning's present collection of Roses embraces about 50 varieties, which represent the choice of a much larger number that have in past years been tried on his grounds. As is always the case with successful plant growing, Mr. Dunning makes thorough cultivation, fertility and careful attention to details, the base of his success. His Roses are planted in beds cut in the sward, and which had first been worked to a depth of two feet and properly supplied with plant food. His favorite compost for the Rose consists of rotted turf and manure, which substance, besides being used for filling up the beds, he spreads to the depth of three or more inches over the surface of all the beds each fall. Occasionally some is added after the beds are stirred with the hoe during the season. When the beds get too full he takes away of the older, partly exhausted soil. By this course the plants are kept constantly supplied with acceptable food, but which is not of a rank kind, and the returns in a growth of strong firm wood and free bloom correspond. Just as the buds form he also applies liquid manure to the beds, and this adds to the success.

FIG. 1. A BED OF TREE ROSES ON MR. DUNNING'S GROUNDS—FROM A PHOTOGRAPH.

Another gain from such feeding is that it gives comparative immunity from insects and diseases. It is the under-fed weak plants that first invite attacks from these. Some insects and mildew are met, to be sure, by Mr. Dunning, but they yield to ordinary methods of treatment. On certain Roses, Abel Carriere, for example, mildew is sure to appear sooner or later. But for such he finds a dusting of sulphur a sufficient remedy and not surpassed by any of the many others that he has in times past tried. For the little white Rose-leaf Hoppers, which in recent years have plagued Roses very much, he simply syringes with water.

The course of pruning Hybrid Perpetual Roses here carried out is not only simple, but it permits of variations, which in one direction, namely, that of producing Tree Roses, leads to the successful results shown in the large engraving on this page from a photograph. Here are trees far more satisfactory than those budded in the usual way on a trunk of some strong growing stock, and very easily grown.

The principle of cutting followed out is, for the bush system, in the fall after the leaves are gone to prune close to the ground all wood older than the present year's growth, and for trees a slight modification of the rule, and which is shown in detail by the use of Fig. 2, with explanations. Thus no wood is ever allowed to become two years old, and the sap cannot become sluggish and checked from the effect on the tissues of our hot summers and severe winters, as is the case in older wood. By such a course the bush plants present a young, vigorous appearance, as shown in Fig. 3, taken from a photograph. The first figure annexed, showing Tree Roses, presents in addition an undergrowth of about an equal number of bushes. The above remarks on pruning apply mainly to Hybrid Perpetual and June Roses. The Persian Yellow species and some of the Mosses require but little or no pruning at any time.

Regarding varieties, the following running comments were made by Mr. Dunning on these, and notes were taken as we passed through the grounds: *Louis Van Houtte*, the best dark Rose; requires protection. *Marie Rady*, is a full deep Rose; hardly equal to *Marie Baumann*, but of the same general character. *Abel Carriere*, handsome velvety crimson flowers of fine form, but to offset these charms it is subject to mildew, requiring careful culture; with this it makes a good growth and blooms freely. *La France* is a favorite, being a very free bloomer, sweet and of exquisite color. *Captain Christy* we here saw for the first time. It is one of those kinds the flowers of which should be thinned, then none can be more admirable; flesh color, deepening towards the center. *Eliza Boelle*, exquisite, almost white; Hybrid Noisette. *Glory of Cheshunt* does not come up to its high recommendations, the flowers lacking size and perfection. *Horace Vernet*, of the Victor Verdier style, scarlet and crimson; although of delicate growth is fairly hardy, the petals having the appearance of being cut out of paper. *Jean Liabaud* is of very dark Roses the strongest growing. *M. P. Wilder* is so much like Marie Baumann that it would hardly be needed except for its being of freer growth. *Eugene Verdier* has flowers about the best of any light-colored Rose; shows a shade of salmon; free bloomer. *Baroness Rothschild*, a fine grower and one of the favorites; light pink. *Fisher Holmes*, a fine deep crimson, rather more like Horace Vernet than Gen. Jacqueminot, to which it has been compared. *Mabel Morrison* here enjoys the distinction of being the best white Hybrid Perpetual in cultivation. *Marguerite de St. Amaude* is one of the most valuable Roses cultivated; bright rose; good grower, a free bloomer, and yielding more fine blooms than any other in the class. *Gabriel Luizet* is one of the greatest acquisitions; free bloomer, hardy, fragrant, a somewhat tangled center. Other varieties besides those named that rank highly here are Princess C.de Rohan, Merville de Lyon, Etienne Levet, Annie Wood, Anne de Diesbach, Francis Michelon, Alfred Colomb, Charles Lefebre, Chas. Margottin, Gen. Jacqueminot, John Hopper, and Jules Margottin. In Mosses, Gracilis and Crested Moss are the first choice; in Yellows, Persian Yellow; in June Whites, Madame Hardy and Madame Plantier.

Cucumber Pickle Packing.

S. D. POWER, NORFOLK CO., MASS.

White Oak firkins are the best things to make Cucumber pickles in; next to that comes stone ware. Pottery or earthen ware will not do, as the vinegar is apt to dissolve the glazing which the pickles absorb, and become poisonous. The little 3 inch pickles are considered the proper sizes by people who don't know much about them, but no good housekeeper will tolerate the acrid unwholesome things. The best pickle for popular use or for sale is one which must be cut lengthwise for the table, an inch and a half thick at least. Such are nearer maturity and of finer flavor, keeping better than the very small ones, and do not tax the digestion so frightfully.

Gather early in the morning or after sunset, as the Cucumbers are better, crisper, and the vines are injured less by picking. Leave an inch of stem on the fruit, pour cold water over to clean them, but do not rub off the spines or black points, or it will decay in vinegar. Handle carefully from first to last, for a very slight bruise will help pickles to spoil. Drain in the air so as to be dry as possible before putting in brine. Use the cleanest rock salt, or if making choice pickles in small quantity, take the pure, dry, diamond salt. Lay two inches in the keg, then four inches of pickles crosswise so the brine can get at them. Cover with salt and a gallon of cold water which has been well boiled. The succeding layers are covered with salt but no more water is needed. Spread a cloth over them, then a board fitting the firkin close with a stone on it to keep the pickles under water. Cucumbers must be put in brine when freshly gathered, for if left a day they will not be nice and will be hard to keep. When more are added, skim off all the scum and wash the board, stone and cloth perfectly clean, rinsing well. It is surprising what a firkin of pickles will throw off if they are sound and lively. Wipe every particle from the pickles and sides of the vessel. When it is nearly full cover with salt, tuck the cloth round the sides, put the cover and weight on, with a tight barrel cover and cloth above, and the pickles will go round the world in good condition. When wanted remove the covers carefully, lift the cloth with the scum on it, and wipe every particle from the inside, washing and wiping the covers, weight and cloths clean, put the pickles wanted in four times as much cold water, and let stand three days, changing the water daily, then scald them in weak vinegar, one quart sharp vinegar to a pint of water, with a teaspoon of powdered alum to each gallon. Put the pickles and vinegar in a porcelain kettle or stone crock, cold, with vine leaves, Horse-radish leaves, or green Cabbage leaves all around and over them to give a fresh color. Never put pickles in metal of any sort, or green them with anything but leaves. When they come to a boil for a full minute set them closely covered with a cloth and cover to keep in the steam, on the back of the stove, or the hearth, or in the sun, to cool slowly. When cold put into jars, and pour over them strong spiced vinegar which has been boiled

and skimmed. Vinegar not boiled will not keep, and the spices help to preserve the pickles. Cider vinegar is the only thing to keep pickles; the manufactured vinegars are either too weak or so strong as to eat the fruit. To the vinegar add the following, tied loosely in a muslin bag: For one gallon of vinegar take two tablespoons black Pepper, bruised, the same of whole Allspice, Mustard seed, first scalded 15 minutes by pouring on salt boiling water, and drained, as much Mace, washed from dust, stick Cinnamon, one tablespoonful sliced Ginger root, the same of Garlic and Celery seed if liked. Also one pound of sugar which in time sharpens the vinegar. Let the vinegar and spice boil well, skimming closely, and pour over the pickles. Such must be drained till dry beforehand, and have sliced Horse-radish root among them, which helps to keep them firm and sound. Leave the bag of spice in the jar, which should be only three-fourths full, the vinegar coming two inches above the pickles. Cover with cloth and board, which if weighted, sets closer than the stone cover. In a week look at the jar, and if any scum rises, drain the pickles, boil and skim the vinegar, and fill up with strong boiled vinegar. Tie on wet bladder and cloth. Two tablespoons of fine salad oil is an improvement. These will be found as much better than common pickles as mince pie is better than brown bread. A good common pickle is made by putting freshly pickled Cucumbers in strong brine, of one heaping pint of rock salt to a gallon of water. Boil and skim the brine, and when cold put the pickles in for three weeks, using the cloth and weighted cover to keep them under water. Drain and freshen in cold water which has been boiled for three days, changing daily for fresh water; scald in weak vinegar with alum as before, with leaves if desired though a yellowish pickle is proof it has not been made in brass or copper. Drain from this, and cover with strong scalding vinegar. Spread with two tablespoons of unground Pepper, two red Peppers whole, one tablespoon stick Cinnamon and a tablespoon of whole Cloves to a gallon. For market, pickles are packed in barrels, half and quarter barrels, in vinegar. Never handle pickles after they leave brine. Use a perforated wooden spoon or tongs to take them out.

Horticultural Notes by Samuel Miller

Saving Garden Seeds. Many gather their Peas, Beans, etc., that they use for the table in summer, and then gather what is left for seed. This is wrong. Leave from the start the best plants, and take none off unless some of the smaller pods for use, and take from these for seed. If this is practiced there will be less talk about running out of certain varieties. When I gather early Sweet Corn for the table all the finest ears are marked and a string tied around them to be left for seed. And while on the subject, let me say that if some days' gain is desired in earliness of Corn, cut off the tops one joint above the ear as soon as the dust has fallen from the tassels, or bending it over until it breaks will answer the same purpose. Try it, some of you, and report the result.

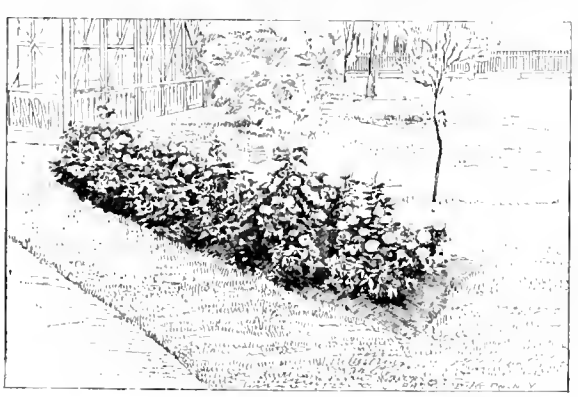


Fig. 3. Elongated Bed of Vigorous Young Roses. From a Photograph.

LeConte Pear Trees not Blight Proof. Some buds three years old on a bearing tree of the Cucklin's Hybrid have commenced to blight the young shoots, some six inches, some as much as fifteen inches, and in a few instances back to the last year's wood. The knife has been used as fast as they appear, so as to prevent infecting other trees, as we have had no blight for several years to harm any. I have ten LeConte trees in another orchard three years old which have not shown any blight so far, but I shall watch them closely.

Whether it is the influence of the stock upon which these buds are growing that causes the blight or not I cannot say, but it should not be, for it is a cousin to the Le Conte. These branches have fruit upon them, and it is with considerable interest the ripening of it is looked for. But if the tree proves subject to blight there is a great disappointment in store.

I saw while in Louisiana a lot of these trees just one year's growth from cuttings that were five feet high and half an inch in diameter at the base. My hopes in it were the foundation of our future Pear trees, and it is possible that as a stock it may still prove of much value.

Some of the New Strawberries. Jessie needs no description, as that has been given often enough, but one feature has not been given which in my estimation gives it additional value. When the first ripe fruit was picked from my plants there were quite a number of blossoms, so I am satisfied that the season will be near a month, thus making it the berry for family use.

Bubach No. 5 is a monster. Shows productiveness and great vigor of plant; quality fair. At the dinner table one day I really was obliged to cut one berry into four pieces to mouth it well.

From Gandy's Pride on plants set out this spring I have some grand berries, and think it will prove to be a most valuable early variety. Plants are vigorous.

Monmouth has a few berries, but they are late. Plant is not strong enough.

Belmont is not fruiting. Sterling and Henderson gave out last summer from the heat. A lot of seed of the Bubach crossed with Jessie are now in the hot-bed, and if we live may see what will come out of it.

On the Fertilizing of Flowers. In reading a report in the Illinois Horticultural Society's Report of 1887, I find that one man had a large orchard of Wild Goose Plum trees that did not bear except where he had other sorts close by to fertilize the blossoms.

I once heard that there were two kinds of Plums out under that name, and am inclined to believe it, for we have two large Wild Goose Plum trees on our place, and four at another place. The large ones have not failed to bear a full crop for six years past, as have the others ever since they got large enough.

Now, there is not another Plum tree within a hundred yards of either of these trees. Why should these bear and that man's fail? His must be a different variety sure. The same writer shows plainly that the Plum may be fertilized by the Peach, and vice-versa; that the Cherry blossoms will also fertilize the Plum. That the Marianna is a hybrid, between the Plum and Cherry. These are developments and discoveries that may lead to valuable results.

The Bellflower Apple is a variety that seems to be deficient in its blossoms, and is a shy bearer when alone, but when surrounded with other Apple trees, or when grafted on another variety bears well. Only by close observation can these things be discovered, and in time we may be able to regulate these things to our satisfaction.

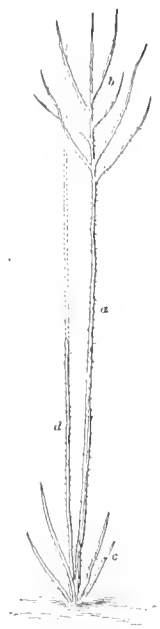


Fig. 2. Forming Tree Rose. a, Last years shoot kept to a trunk to be cut away in the Fall, b, Present years flowering growth, c, Young present year's shoots all but one (seed) to be kept retarded by pinching, and pruned away in Fall, d, Strong young shoot to remain for next year's trunk reaching extent of dotted line by Fall.

And now I am going to put a question for the more scientific to solve. In a vineyard on my place I set out some Mary Stewart Strawberry plants. It is a pure pistillate, and some other staminates were planted in other rows. On the principle of the survival of the fittest the Mary Stewarts are still there and bear every year, while there is not a staminate, nor has there been, within 100 yards for five years. Is it possible that when once fertilized that it will remain so? Even the runners bear well. This is what I would like to have explained if any one can favor me by so doing.

A New Potato: The Polaris. Why this is not found in the price-lists of the growers seems to me a little strange.

Last spring a year ago I received a few tubers from the Department at Washington, and as they came late, and the season was very dry and hot, they yielded about half a bushel. These were all planted this spring. They seemed to take the lead where about six varieties were planted, but a late frost and next the Colorado beetle, has given them a hard row to travel. At this date they are double the size of any others except Early Ohio, with which they are about even. It is of a fine form, color nearly white, quality excellent, and keeps well during winter. They are now fit to use, but still having old ones we let them grow.

I set it and Chas. Downing out together. Sprouts started quite late, as I did not get the latter in time to set early.

I find that when the Potato bugs have got a start the best plan is to take a wide-mouthed bucket, go along the row, bend the tops of the plants over the mouth and shake or tap the plants. Do this every day for awhile and the battle is won. I know that if we had not persevered in this my half acre would have been a failure. In going over the patch one day I am sure we captured at least one bushel of bugs.

The Moon's Influence upon Vegetation. A committee has been appointed by the Governor of Trinidad, to determine what influence (if any) the moon exercises on the plant life during its different phases. The light, heat, and gravitation of the moon are taken into consideration, and also whether it has any influence on the diurnal variations of electricity. The sun is calculated to give 618,000 times as much light as the moon, but only 82,000 times as much heat. Seeing that plants can accommodate themselves to a considerable variety of temperature, it cannot be conceived that 17 millionths of a centigrade degree would influence them very much; yet this is all the heating power exercised by the moon during its first quarter. When the moon is full, the temperature is raised 94 millionths of one degree. So far, the results of the inquiry have not shown that the moon has material influence on vegetation.—Gardening World.

Ontario County. A Short Call at the State Farm.

Passing through Ontario County, New York, recently we took occasion to drop in at the State Experiment Station at Geneva, even though it was Saturday afternoon and the trains gave us scarcely above an hour on the grounds. A heavy shower in the hour also interfered with making most of the time at our disposal, but as rain was so much needed no complaints were heard. We had thought that the extreme western end of the State showed "as dry as could be," but here the parched grass along the roadsides and about the buildings of the State grounds, and vegetation generally, told of suffering to plant life such had not been endured in Niagara County and adjacent counties up to that date.

Managing horticulturist E. S. Goff and his assistants, Beckwith and Hunn, were attentive to our inquiries during our all too-brief call. Here we had pointed out a plat some acres in size, laid out in beds about 20 feet wide, walks between, and devoted to experiments in vegetables, grasses and small fruits, besides a new vineyard of nearly 100 varieties, old and new orchards, and some of the older Strawberry and small fruit plats that are soon to be turned under.

Among garden vegetables the Tomato is receiving a fair share of attention in the garden. Special interest is being taken in an upright growing variety of this vegetable, which originated on the grounds two years ago, a cross between the French Upright and the Alpha. Being both early to ripen its fruit and of compact habit Mr. Goff is after two years trial, of the opinion that it possesses value as an early variety for forwarding under glass. It grows to a perfect tree one foot and a half high, and of the same width, with the ends of the outer branches lapping to the ground. The foliage is of a singularly dark green color. The fruit appears near the axis of the plants.

Among "novelties" in vegetables we noticed the Gabo from Japan, looming up conspicuously and presenting a wonderfully familiar appearance for having come from the antipodes. This, we hardly needed to be told, was nothing more than the common Burdock, which, although classed as a troublesome weed (of some medicinal value however) by us, takes third place in importance among culinary vegetables in Japan. The root is the part there used occupying a place quite similar to that of the Parsnip in this country.

Bordering the vegetable plat on two sides is the highway line, and indicated by a Norway Spruce hedge. We refer to this hedge because of its fine character, extending as it does to the full length of the north boundery of the farm, and partly along the western one. The hedge is about seven feet in height and of conical form crosswise, having rather a broad base. It is sheared every spring. Asked how he esteemed the Norway Spruce for hedges as compared with other hedge plants Mr. Goff replied that he thought it was one of the very best and worthy of wide use. As managed here it certainly makes a first-rate fence, as well as answering an admirable end in the way of a low wind break.

Among forage crops we noticed a fine plat of Alfalfa or Lucern—the two being identical, which had been once cut and was again starting up firmly. This plant is here ranked highly as a soiling crop because of its strong early growth, followed by heavy later crops. It does not form a sod but is kept in drills. The present vigorous plat was sown in 1882.

The showing of the Strawberries was anything but satisfactory owing to the extreme drouth prevailing. Indeed we have nowhere seen this fruit in a worse plight on this account, than on the old beds located on light soil here. The heavy rain prevented our making any notes on the relative showing of the varieties. Mr. Goff remarked that the Coville's Early had demonstrated its value as an early variety for home use, for it came in fully four days earlier than any other sort. It is too soft for market growing except for a near market. Cornelia was mentioned as a satisfactory late variety for the amateur. A small plot of plants that had the year previous been sprinkled with a solution of sulphide of potash, the residue of a can after treating some Apple trees for scab, showed a fine contrast in healthfulness of foliage with most of the surrounding parts. Although made without any special object in view, the appearance of things now a year after the application goes far to indicate that in this is to be found, a remedy against Strawberry leaf blight. The treatment referred too is of so simple a character that growers who are troubled by this ailment of the Strawberry would do well to to give it trial.

Insects in the Development of Flowering Plants.

CLARENCE M. WEED, OHIO EXPERIMENTAL STATION.

One of the most interesting fields of investigation which modern science has opened up is that of the mutual relations of insects and flowers, the study of that exquisite interdependence by which one organic group is necessary to the other. Eminent botanists believe that many ages ago there were none of the large-petaled parti-colored flowers that now give such touches of grace and beauty to our landscapes. Then flowers consisted only of the essential pistils and stamens—as is the case now with the inconspicuous blossoms of the Oak, Hickory and similar trees. Doubtless these flowers depended upon the wind to carry the fertilizing pollen from blossom to blossom, but with the introduction of insects, especially the bees and wasps, it became desirable for some plants to make the most of these new pollen carriers, and so they were gradually changed to fit themselves for this end.

The way in which these curious changes were brought about is thought to be somewhat as follows: Every gardener is familiar with the fact that plants under certain conditions will vary or "sport" as it is called, from the one which produced the seed. This occurs not only in cultivated plants but also in wild flowers. The first petals were probably developed from some primitive sportive blossoms in which the outer stamens became flattened, these making the plant more noticeable than its non-sportive neighbors. Being more conspicuous it would be more freely visited by bees and other insects, therefore more certain of fertilization by pollen from another plant; because of which, as Darwin has so clearly proven, the seeds produced by the flower would be better developed, and produce stronger plants than the others. These plants would in turn produce flowers having similar peculiarly developed stamens, which would again be more freely visited by insects, and consequently develope thriftier seeds, so the process continued until a row of the insect-attracting petals were developed as in the Apple, Cherry, Pear and the great majority of our common flowering plants.

This evolution of petals is strikingly illustrated by the white Water Lilies of our ponds. Toward the center of the blossom is a large number of the yellow styles of the stamens with the pollen bearing anthers upon their summits. A little farther out some of the styles have become flat with the anthers only partially developed, while still farther towards the edge the styles are whole and have no trace of anthers, only differing from the petals by their smaller size and yellow color. As Grant Allen has well expressed, it "stereotyped, as it were, the mode of evolution of petals from stamens."

Here another phase of the subject comes in view. "How came the flowers to be of so many colors, and why are some blossoms of one color and others of another?" As stamens are very largely yellow, many suppose that primitive flowers were largely yellow; and the question arises "How came these originally yellow petals to assume the many varied hues they now possess?" A quarter of a century ago this question would scarcely have been thought of, to say nothing of an attempt to answer it, but thanks to the researches of Darwin, Lubbock, Muller, Gray and others we can now at least point to a plausible solution of the problem.

Their investigations prove not only that the colored petals of flowers are parts of the plant especially developed to attract insects, but also that certain colors attract certain insects. For instance, Dandelions, May-weeds, and other white or yellow flowers are most freely visited by two-wing flies, while bees, butterflies and wasps are most freely attracted to more highly colored ones. This color preference has been conclusively proven by Sir John Lubbock in the case of bees. But why did the primitive yellow flower commence to vary. Here again we attribute it to that element in plant life which is called sporting. Suppose a yellow blossom, through some change of circumstances or locality becomes slightly pinkish. It would at once be more readily seen by the insect visitors, and hence would be more freely visited. Then the same great laws of natural selection as mentioned above come into play, and continue to act until the progeny of the original sport becomes a well-fixed species.

This fascinating subject has not received, especially in America, one-tenth of the attention it deserves. I have attempted to indicate one or two of the general conclusions which have been reached thus far; but there are many other parts of the subject, that illustrate equally well the applications of modern doctrine of descent through variation to the organic world as we find it to-day.

Methods of Quince Propagation.

W. W. MEECH, CUMBERLAND CO., N. J.

Propagation by Seeds. All the recent varieties of merit seem to be chance seedlings. Seed should be selected from the best specimens. It should never be allowed to get thoroughly dried before it is planted. If not convenient to plant when taken from the fruit, preserve it in moist sand till spring, when, in a well-prepared seed-bed, it should be covered two or three inches deep, and treated as other seedlings.

Propagation by Layers. It is a very simple operation to bend down a limb, and keep it covered with moist earth till it is rooted, and then cut it from the parent tree. If the bent branch is partly cut off or slit up under a bud, or twisted like a withe at the lowest point, it will help both the bending and the rooting. A wire twisted around the layer just below the bottom bud in the ground, and holes punched through above and below the wire, may help; or the holes may be made through the layer in the buried portion to stimulate its rooting from the callus of the wounds. The bark is sometimes cut nearly around the layer just below a bud, and bits of wood removed below this cut to induce the formation of a callus, from which roots are emitted. It is sometimes necessary to fasten down stiff branches with a forked peg or a weight. Young shoots of thrifty trees make the best layers. Early spring is the best time to put down layers, that they may be well rooted by autumn.

Mound Layers or Stool Layers differ from the others, by having the earth heaped up around them instead of being buried in

the earth. The sprouts from stumps or around growing trees, being well banked up, will readily root as high as moist earth presses against them.

PROPAGATION BY CUTTINGS is probably the best method of multiplying Quince trees. Cuttings of large branches are better than those of small shoots. The amount of wood seems to measure the vital force to form both roots and tops. From twelve to fifteen inches is a good length, enabling us to plant

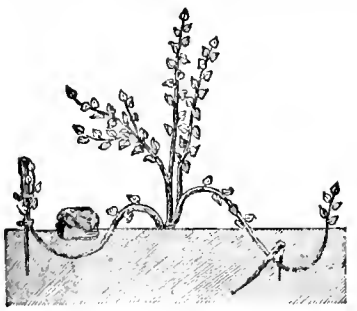


Fig. 1. Quince Propagation by Layers.

deeply, and so guard against drought. Small cuttings may be cut shorter, and have a piece of Apple or Quince root grafted on to push them. The chief thing is to guard against the exhaustion of sap by evaporation until roots are formed. Facilities for regulating light, heat, air and moisture with precision will enable us to succeed with a succulent cutting furnished with a few leaves. When the air is warmer than the earth, buds are excited more than roots; and when the ground is warmest, root growth is most excited.

In preparing the small cuttings to receive the pieces of roots grafted on them, the chief thing is to have their cut ends fit, so that the inner bark shall match at least on one side and at the end of the cutting.

The grafted cuttings may be quickly dibbled in, making a hole deep enough to receive the whole length except a bud or two above the surface. Holding the cutting in the hole at the right depth with the left hand, push the earth firmly against the cutting with the dibble, as you would in planting a Cabbage. For lack of such firming of the earth there are many failures.

The fall, after the leaves have dropped, is generally preferred for taking the cuttings; but they may be taken much later. I have had some cuttings grow in the open air, which were made in May, after the trees were growing.

ROOT CUTTINGS a foot or so long are best prepared before the buds swell in spring. I have trees from pieces of root cut off by the plow as late as June. Plant at an angle of about forty-five degrees, or as near as you can to their natural position.

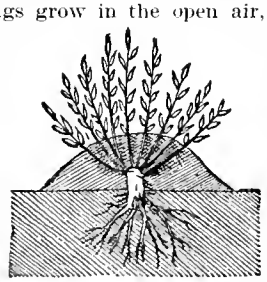


Fig. 2. Mound Propagation.

PROPAGATION BY GRAFTING is successful where the inner barks of both stock and cion are made to fit together. A union forms most readily between varieties of the same species; next between species of the same genus, and is limited by genera of the same natural order. By this law one variety of Quince will do best grafted on another; and next on the Apple, white Thorn, and Juneberry. On the white Thorn it escapes the attacks of the borer.

The choice of wood for cutting is last year's growth from near the center of the tree. Be sure they are from healthy and vigorous trees. If trees are propagated from bearing wood they will come into fruit sooner than if from blind wood. Here is a reason for the difference in the bearing age of trees from the same parentage.

Spring is the best time for grafting, except the root grafting already described. In March we work by the methods best suited while the bark adheres to the wood, and later by those suited to a bark easily separated from it.

PROPAGATION BY BUDDING follows the same law of affinity observed in grafting. The buds may be taken from wood of the growing shoots well matured, or from the preceding year's growth. A cion too late for grafting may be treated as a cutting till its buds can be used. The bark of a Quince tree can be raised for the insertion of a bud most of the growing season. The best place to insert it is near a bud, or where a bud has become a branch, as the supply of cambium is there most abundant.

Failure may arise from injury to the cambium in cutting and raising the bark of the stock, from too narrow a cross-cut to receive the shield of the bud, from using immature buds, from the shield being too short (it should be at least an inch long), and from being loosely tied, so as to dry out. The south side of a stock is dryer in summer, and is to be avoided.—From Quince Culture.

The Fall Web Worms.

BY LYMAN F. ABBOTT, ANDROSCOGGIN CO., MAINE.

The web worms (*Hyphantria textor*, Harris) do a good deal of damage to orchards in the late summer and early fall. Here in Maine, the home of the writer, the first webs are usually seen about the middle of July, and the caterpillars—later broods—continue their depredations frequently until frosts occur. Apparently this insect has been on the increase in New England for the last few years, and it is safe to say that no insect which infests our orchards, with possibly one or two exceptions, is so destructive to the fruit trees the last half of the season as this.

Unobserving farmers often confound the web worm with the tent caterpillar, but although belonging to the same family the web worms come into a different class, possessing different habits in their ways of working, as well as coming on to the stage of action just as the tent caterpillars have passed of. Both are leaf eaters, and both spin webs and construct tents, but the latter only uses its tent for a house or covering, passing out to the extremities of the branches for its food, while the web worms enlarge their tent as it feeds, enveloping the foliage in its web until several branches become covered with their unsightly webs and sere and dried foliage.

The eggs of the web-worm moth are attached to the underside of a leaf in patches of 50 to 100 eggs. They are of a yellowish color, and may be found by the 15th of July in this latitude. The eggs hatch in a few days and the young caterpillars at once begin to spin their webs, soon covering the leaf to which the eggs were attached with silk under which they feed, eating only the tender cuticle of the leaf. They then proceed from leaf to leaf, and as they increase in size, from branch to branch, covering quite a portion of a fair-sized tree by the time the caterpillars attain their maturity.

When full grown these caterpillars are rather more than an inch in length. They feed about six weeks, then separate and seek a place to spin their cocoons. They pass the winter in the pupa state; the moths, which are pure white, appearing late in June and the first of July the next year.

Remedies: Pyrethrum and arsenites—London purple or Paris green—will quickly destroy this pest, but the difficulty of reaching the caterpillars with Pyrethrum on account of their web, renders this remedy nearly useless. The arsenites applied to the foliage before being inclosed in the web will kill all the worms which eat the sprayed leaves, but the objection to the use of these poisons is the danger of its adhering to the fruit when applied to bearing trees. An effectual method, but one entailing considerable labor and time, is to search for the young colonies, which may be discovered about as soon as they envelope the few leaves contiguous to the one in which the worms hatched, cut off the twig they occupy and crush them under the foot. Quite effectual work can be done with a sponge attached to a pole and dipped in kerosene oil, thrusting this into the nest and winding off every part of the nest and worms together. Contact with the oil will speedily destroy the caterpillars.

Small Fruit in Delaware.

DAVID S. MYER, SUSSEX COUNTY, DEL.

Strawberries yielded a good crop, which was on the whole a paying one. There is no boom in new varieties.

We find nothing to yield and pay like the Crescent when it is properly grown and properly mixed to insure good fertilization. We think every third row of Bidwell the best, as Bidwell is one of the best early Strawberries for the sandy loam land of Delaware. A berry of superior quality, when once known for table use, few, if any others will be inquired for, while taking one year with another, it will nearly equal any variety in quantity. May King is a fine medium-sized berry, fine quality, and early; but too soft for distant market. Belmont is a sort that, with extra high culture, produces extra fine berries of good shape and superior quality, it is an improvement over Sharpless.

In Raspberries, Souhegan comes at the head of early Black-caps, and is the most valuable of all the Black-caps we have tested. Hansell is the first of the Reds to ripen, and proves to be the most profitable of all the early ones. The Marlboro is of no value as a market berry, not being hardy or vigorous. Cuthbert stands next to Hansell, these two being the most valuable Reds.

Early Harvest Blackberry has fruit of much better quality than the Wilson Early, but will not be a success with every grower, as it requires very peculiar training.

Strawberries in Indiana.

G. COWING, DELAWARE COUNTY, IND.

The Strawberry crop in Delaware County was almost a failure this season. The drought last autumn, the almost total absence of snow, the rain in the early part of May, followed successively by sharp frosts, drought, intense heat, and a flood of water, were the causes that reduced the crop, in many cases, to less than one-sixth of the general yearly average.

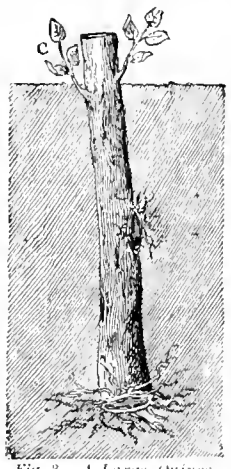


Fig. 3. A Large Quince Cutting.

Of old varieties, Crescent, Kentucky, and Jersey Queen proved most productive and profitable. In consequence of blight and frost, Cumberland produced but few perfect berries.

Of new varieties, Logan, Jessie, and Bubach were the best. They are all strong growers and but little inclined to blight. Logan is productive as Crescent, and its berries are much larger. The berries of Bubach average larger than those of any other variety; variable in shape, bright scarlet in color, of good flavor, and attractive in appearance, and productive, surpassing Cumberland when in its prime, in that respect. Jessie furnished me with the largest berry of the season, but it did not furnish as many very large berries as Bubach, nor was it as productive or as sweet, but it was more shapely. Frost did not allow it to be fairly tested. It is certainly a fine variety, worthy of general trial.

Ohio resembles Kentucky and proved even later. It is very productive, but subject to blight, and its berries are too small and too sour to allow it to become popular. Belmont is a strong grower and its berries of delicious flavor, but when fully ripe, too soft to be marketed. It is also unproductive. Itasca bloomed early, and its flowers were destroyed by frost to such an extent that a fair estimate of its value cannot be made this season. It did much better last year. Its berries are very firm and very sweet. Haverland fruited only on plants set last spring. It resembles Crescent in plant, habit of growth, and productiveness, with a fair promise of a larger berry of much better flavor.

Notes by an Illinois Cultivator.

N. Y. L., ADAMS CO., ILL.

THE MIDDLEMEN. We would like to have the money the consumer pays for our produce instead of the money we get from the commission merchant. But if the middlemen be evils, they are necessary evils. The world cannot get along without the merchants. It is cheaper and better for you and the consumer to meet in the store of the merchant than for you to go to the consumer or him come to you. This is financially wise. He who grumbles at commissions and writes fretful, fault-finding letters to the merchants, loses money by so doing. Moreover, many could not spend time and money to so good advantage as by visiting three or four commission merchants, noticing how each and in what manner consignments must be handled, how others pack, and above all, taking to heart any advice the merchant may give. In reality, his interests and yours are identical. Products gathered at the right stage, handled properly, and packed carefully, sell the more readily and at better prices; hence are more profitable to you and to the merchant; and he is a very wise producer that the merchant cannot give some valuable "pointers."

AUGUST IN THE GARDEN. All growing crops during August require all the moisture easily obtained during this hot, dry month following a hot, dry month; and crops of a succulent nature, such as Cabbages, Celery, Cauliflower, etc., need, in nine cases out of twenty, all the moisture the ground can give. Hence, any growth of weeds shortens the crop more than at an earlier period; for they do the more hurt by absorbing and exhaling moisture. When the daily moisture waste of even half a dozen weeds is measured by pints, how great must be the damage done by even a sparse growth of weeds on the ground. The cultivation this month should be as clean as during the preceding month; and for the further reason that weeds now mature very rapidly, and a cessation or negligence in cultivation is apt to result in the seeding of the ground. Weeds are most easily destroyed before they reach the surface. A simple stirring of the surface ground suffices; and it has been demonstrated that this stirring also conserves the soil moisture, though some question, as to the exact way in which this is accomplished.

A BIRD NOTE. The fruit grower and vegetable gardener will do well to read as if true Longfellow's "Birds of Killingsworth." The phænological reports of the British Meteorological Society give at least one instance to confirm Longfellow's tale. The winter of 1878-79 was so severe that there was an unprecedented mortality among the birds, and the following season's reports to the Entomologist of the Royal Agricultural Society showed unusual insect depredations upon the crops. Miss Ormerod gives it as her belief that a great and widespread mortality among birds is hurtful agriculturally. Nevertheless, there are undoubtedly some birds that do far more harm than good. The English sparrow is generally condemned. I consider myself justified in killing the Red-headed Woodpecker, notwithstanding that many will condemn me for this. This bird takes ten times as many Cherries from me as all other birds combined. He also likes berries. He pecks my Apples, and makes worse any decaying spot in the tree. He ruins many a White Oak by pecking a hole into it which allows the water to reach the heartwoods; and the result is that when an apparently sound log is split open it is found so much decayed in spots that it is worthless for either rails or posts.

AS TO THE SOURCE OF SEEDS. The Missouri Agricultural College made a test of seeds as to per cent. of germination and correctness of names. It found that the seed from firms that are seed growers gave good results, both as to germination and being true to name. From ten to thirty varieties from each firm were carefully tested, and those got from seed growers were all true to name, and with few exceptions the per cent. of germination was very high. But with the seeds got from those who are only seed dealers the results were different. Several varieties did not germinate at all; others were badly mixed; and yet others were utterly unlike what they were claimed to be. This makes an important distinction between dealers who grow their seed and those who do not; and I believe the distinction to be just, in the main. I have never got seeds, bulbs, or plants of a well-known firm who grew what they sold, that my purchase was not entirely satisfactory. I am of opinion that the experience of my readers is substantially the same. Because we are "taken in," we must not condemn indiscriminately. And if we can divide dealers into classes—one to avoid, one to patronize—we will make ourselves safe at the same time being just to the dealers.

GOOSEBERRIES, GREEN AND OTHERWISE.—Of all fruits the one worst treated is the Gooseberry. It is yet used while green, as the Tomato was when first cultivated. What other fruit could have as good reputation as the Gooseberry, if used green? What fruit can be highly prized when used before it is ripe? This is unnatural; it is taking the fruit before nature has got it ready. The excuse is that if you cook the Gooseberry when ripe it is spoiled; but this applies as well to the Grape, and the Grape is not used green, except by some to make a fancy jelly. A ripe Gooseberry is delicious. It is sweet and melting and delicately, agreeably flavored. Ripe Gooseberries with cream are the peer of Blackberries or Raspberries. They make a splendid pie; and when you make ripe Gooseberries into a pie you are not compelled to assault your health with soda or bankrupt yourself for sugar, to make it eatable. If you are so fastidious that you can not eat pie wherein the fruit is "cooked up" somewhat, shut your eyes and eat like a Christian; that is, eat fruit only when the Lord has got it ready, and by the signs of its ripeness invited you to the wholesome, tempting feast. The bush of the Gooseberry is maltreated almost as criminally as the fruit. No one worries to improve it. It is rarely cultivated. The ground wherein other berries grow is enriched and mellowed, but the Gooseberry stands among weeds and grass in hardened, impoverished ground. Where is our American spirit of fair play, that the Gooseberry of our grandmothers is so ill-treated?

Planting Alpine Strawberries.

To do these well, says a writer to the English Garden, they require liberal treatment and quite as frequent removal as is customary with the large-fruited kinds, and then they are profitable to grow. This is a time of large things, and those who go in for show would despise the Alpines. Nevertheless, the latter are very useful, especially where fruit is eaten for breakfast. They are also valuable after the other Strawberries have disappeared for flavoring and other purposes in the kitchen.

Spring is a good season to make new beds. It is thought by some that being an Alpine plant it should necessarily be planted in some high and dry situation. This is a mistake, for though the plants will not perish, perhaps, in a dry situation, they do suffer as much as other varieties from drought in a dry time, and the fruit then becomes very small, dry, and flavorless.

The finest and best flavored fruits of this Strawberry I have ever gathered were grown on a piece of cool-bottomed, dampish land, partially shaded by the branches of an adjoining fast-growing Oak tree. Here, on this bit of damp, cool land, week after week, baskets of juicy, richly-flavored berries were gathered daily for a long time, the bed remaining in good bearing condition for four years. Last season the hot summer told upon it, and this spring we have destroyed the old bed and started a new one.

If healthy plants, which is generally the case, are to be had from the old beds, I use them, though they can be easily raised from seed, but where seedlings are employed the young plants should now be up if they are to fruit this season. Plant a foot apart each way, and press the plants firmly in the ground, giving them a good soaking in water. It is always best to plant when the surface of the bed is dry. It is not necessary to mark the land off in beds, continue planting row after row till all the land is occupied.

Old beds, or beds of more than one year old, should be kept weeded in the spring, and heavily mulched with rich manure. In fact, this heavy mulching is the secret of success, and this treatment of surface-feeding should begin as soon as the young plants are fairly fixed in the ground, and continued till they are destroyed.

Varieties Running Out.

A writer, in the Country Gentleman, referring to the grounds taken by a correspondent in these columns that improved varieties of fruit rapidly deteriorate, says that to reach a correct conclusion on this matter, all the influences must be taken into the account. The Sharpless and Wilson Strawberries are very different fruits from the original wild varieties. They have been improved up to a very high position, and under the influences of ordinary cultivation will naturally tend to recede toward the original state. But this should not be regarded as the legitimate result. It is not the defect of the variety, but the deficiency is in the food they receive. A high condition must have the treatment naturally belonging to it. A very successful cultivator, who obtains prices for his Strawberries nearly double the common market rates, assures us that he places the Sharpless at the head of his list, and that the old Wilson gives surprising results with high cultivation; and that if it were sent out again as a new variety under a new name, with the care and culture that new varieties are receiving at the present day, it would take the Strawberry world by storm.

Some of the finest of the large fruits still hold their original excellence. The Bartlett Pear, which originated more than a hundred years ago, stands this day at the head of the list as a popular market variety, and some nurserymen sell more trees of the Bartlett than of all other Pears. The Baldwin Apple, more than half a century old, is planted more for market in several of the States than all other sorts put together.

We believe it to be sound teaching to show that good cultivation is always required to produce fine fruit, and that varieties run out with old age through a deficiency in their needed food supplies. The hypothesis of the "survival of the fittest" entirely fails when applied to varieties of fruit, for instead of the best crowding out poor sorts, it is necessary to give them constant care to retain their excellence; and those of the finest quality are not obtained by any natural selection, or by voluntarily crowding out the poorer ones, but artificial selection alone will secure them, by choosing the best out of myriads of seedlings.

Fruiting Qualities of Plants.

E. W. REID, BELMONT CO., OHIO.

Many mistakes are made by growers, and also plant dealers, by not selecting good, strong, well-crowned Strawberry plants for setting. The time to do this should be the year previous to setting for fruit. A few hours spent with the vines will show that on different soil the vines will have heavier crowns and a fewer number will be barren.

The point I wish to bring out is the one relative to the Wilson's running out in many localities, and I might say, here in my midst, I think I can see plainly the reason; no thought was ever given to the vital matter referred to, and it was fruited year after year on soil of the same nature.

This old "run-out Wilson" still has its portion of the farm with me, and as long as it keeps up its reputation it will be grown.

At one time my stock was not as good as in previous years, and to bring them to perfection again I adopted the plan referred to with change of soil.

When plants are taken year by year, and no selections made, they will in time run out. Set five barren plants this spring, and you may expect many next, for the plant that produces the least fruit always makes a large amount of runners, hence you are more likely to take plants for setting the following spring from a large number of poor fruit producers.

When the proper attention is given, the purchaser should lose a very small per cent. of plants. This spring I paid $18 per 100 for plants to set, and I don't think there are two plants to represent each 100. Such dealing as this can not be fruitful, but in time will pass away. To grow good fruit, good plants are a necessity, and it is useless to try unless you have them.

When plants are planted, and only a few live to represent each variety, it is discouraging to the grower, as very often the few that remain are neglected, or not cared for, so that when the season comes when they should redeem themselves they will fall far short, and the nurseryman will undoubtedly get the entire blame for poor results.

The fruiting qualities of plants should be maintained by the dealer as well as the grower, but it seems to be the last point of consideration; the one that presents itself first is, how can I produce the most plants with the greatest profit?

It is not the first runners which show themselves that make the best plants, but the plant the runners are kept from running. Until the middle of July or August 1st, the runners and fruit stems should be pinched off as they appear, this will give the plant a good start and when let run, the runners will present a different appearance, being much hardier, and will make much better plants. I have also found that plants with all leaves cut away will take hold much easier than those allowed to grow at will.

Some plants set about June first when the vine was full of sap and weather dry, never stopped growing, the crown making the appearance of new growth in a few days. Those who grow potted plants should set in fall, and not allow fruit to set the following spring, working as spring set plants.

The young vines can not be cultivated too often, the more the better, and should be cultivated as soon after a rain as the soil will permit. Had we not cultivated often last season and at the proper time, we would not have had plants or fruit, as the season was so dry, the runners made as many as four sets but could not take hold of the ground for lack of moisture, and the small rootlets were dried until September.

At this season of the year the plants could not get as good a growth as we would like to see, and it was very noticeable on the crop which was not more than one-half.

But we must live and learn, hope for a brighter future, put forth effort to bring plant and fruit to perfection, if you do not succeed the first year, you will profit by the lesson, and you can yourself see your mistakes more clearly than others.

Manures: Their Composition and Use.

Continued from page 191.

COMPOUND MANURES.

These are general manures containing nitrogenous matter, phosphates, and potash, and their value depends not only on the amounts of these constituents, but also on their fineness of division, their solubility, and the skill displayed in their manufacture. The general character of a few of the more common of these may be indicated thus:—

TURNIP COMPOUNDS. These usually contain from 25 to 35 per cent. phosphates, of which the half or more is soluble, and nitrogenous matter capable of yielding from 2 to 4 per cent. of ammonia, and sometimes 1 or 2 per cent. of potash.

POTATO COMPOUNDS. These are somewhat like the preceding, but contain usually less phosphate and a little more ammonia, from 4 to 6 per cent.; sometimes they contain no potash, but more frequently about 3 or 4 per cent. is present, and in some instances twice as much.

BEAN COMPOUNDS. These may contain from 10 to 20 per cent. phosphates, nitrogenous matter yielding from 3 to 7 per cent. of ammonia, and usually a considerable proportion of potash, often from 6 to 10 per cent.

CEREAL COMPOUNDS. These usually contain about 20 per cent. phosphates, mostly soluble, and nitrogenous matter, yielding from 3 to 6 per cent. ammonia, and seldom contain potash.

GRASS COMPOUNDS. These are somewhat like the preceding, but may contain less phosphates and more nitrogen, part of which may be in the form of nitrate.

RELATIVE ACTIVITY OF MANURES.

Dr. Aitken writes as follows in reference to the relative activity of manures: Nitrogen.—Most active in—1st, nitrates; 2d, ammonia salts; 3d, high-class Peruvian and Ichaboe guanos; 4th, high-class dissolved compounds; 5th, dried blood; 6th, steamed bone flour; 7th, fish guano and fine bone meal; 8th, rape-cake and cotton-cake dust; 9th, bone dust and crushed bones. Phosphates.—Most active in—1st, super-phosphates and dissolved phosphates derived from any source; 2d, precipitated and reverted phosphates; 3d, steamed bone flour; 4th, bone ash; 5th, Charleston and similar phosphates ground to the finest flour; 6th, bone meal and fish guano; 7th, bone dust and crushed bones.

HINTS ON THE APPLICATION OF MANURES.

Dr. Aitken also gives the following hints on the application of manures:—

NITROGENOUS MANURES. Nitrate of soda.—Apply as a top-dressing to the plants just up. Showery weather is best. Heavy rains cause loss. Two half-doses with fortnight interval better than one whole dose. Increases straw more than grain. Sulphate of ammonia.—Apply as a top-dressing after sowing, not after brairding. Increases grass, diminishes clover. More suitable than nitrate for wet districts. High-class guanos.—Apply with the seed, or partly as top-dressing. Useful for young grass and early Potatoes. Dissolved compounds.—Apply with the seed. Dried blood.—Apply a month before sowing, if possible. If applied with the seed, useful for root crops only. Fish guano.—Best on warm, open land, and in moist climates. Apply very early. Should not contain more than 3 per cent. oil. Leather and shoddy.—Of no value to the farmer.

PHOSPHATIC MANURES. Super-phosphate.—Best phosphate for clayey soils. Suits medium soils. Makes early crops, therefore good for late districts. Increases grain more than straw. Precipitated phosphate.—Best on medium and light land. Steamed bone flour.—Should be finely ground and applied early. Best on light soils or on moorland. Suits wet climates. Excellent improver of light pastures. Quicker than bone meal in its action. Bone ash.—Generally applicable. Best on light land. Bone meal.—Should be fine as possible and applied early. Best on light, free soils, and on sandy soils. Mineral phosphate.—Must be ground to the finest flour, and feel soft and chalky. Best on moorland and land rich in organic matter. Should be applied very early. Bone dust and crushed bones.—Suitable for vine borders. Phosphatic manures, applied alone, frequently fail to give a full crop. Some nitrogenous manure ought to be mixed in.

POTASSIC MANURES are useful where Potatoes or Beans are grown, or where straw is sold. They increase clover, and are seldom required where much dung is used. Sometimes injurious if applied with the seed. Should be applied very early.

LIME is best when coarsely ground, sown broadcast, and allowed to slake on the land. Better slaked in large heap and then carted on and spread, than slaked in small heaps on land. Better two small limings than one big one. Best results on clay land and moorland. Liming on the meadow prevents finger-and-toe, but frequently fails to do so if applied to stubble.

Professor Kedzie on the Use of Marl.

In many parts of Michigan and elsewhere farmers find, especially at the bottom of muck beds and shallow ponds, a layer of varying thickness of a white or yellowish white material, differing so much from the ordinary soils in the vicinity that they are curious to know what this mineral is and what it is good for. This material is marl, and consists of carbonate of lime, carbonate of magnesia, sometimes a small amount of phosphate of lime, some oxide of iron, and a variable amount of sand and clay.

The value of marl depends almost entirely upon the amount of lime and magnesia it contains, and its value is diminished in proportion to the amount of clay and sand present. The lime and magnesia are found in marl mainly in the form of carbonates. A ready test for a carbonate in such cases is to pour on the material some strong acid, and if a carbonate is present it will foam up or effervesce in the same way that saleratus will foam up when vinegar is poured over it; only the effervescence with marl is slower, because the marl is less soluble than soda. If the material does not foam when an acid is added, it is not a marl, but probably a clay of no value.

A good way to determine the quality and value of a marl is to determine how much of the material is soluble in common muriatic acid. This can be procured in any drug store, and ought not to cost more than ten cents a pound, as it only costs three cents a pound. One pound of the acid will be enough to test three or four specimens of marl. Mix the acid with one quart of rain water and put this in a bottle for use. Take a tablespoonful of the material supposed to be marl, put this in a large glass or earthen vessel (avoiding metallic dishes) and slowly pour over the material a half teacupful of diluted muriatic acid. If it is a marl the effervescence will show this fact; if it all dissolves, leaving no residue or but little at the bottom of the vessel, it is marl of good quality; if but little is dissolved and a large residue is left at the bottom of the dish, it is of inferior quality.

It is recommended for use on sandy soils which contain vegetable matter. For arable soils and light lands, thirty bushels to the

acre are called sufficient, but this is governed by the quality of the marl. The professor says there is little danger of injuring the soil with an excessive dose, as may be done with lime. On grassy lands marl may be applied at any season. It must be finely pulverized, which can be done by freezing better than any other way.—Agricultural College Bulletin.

Grafting by Approach or Inarching.

The engravings on this page show one of the oldest and most simple methods of implanting one variety of a plant upon another, that is known, namely, grafting by approach or inarching. The first engraving is that of an East Indian gardener who has nearly completed this operation in the case of two young Mango trees, the one serving as a stock the other as the improved sort grafted upon the stock. The same simple course is applicable also to Grapes, Oranges, Lemons, Camellias, Chrysanthemums, and many other plants. Any amateur may expect to easily succeed with the operation.

Whether the stock, that is the part furnishing the roots, is growing in the open ground or in pots, the operation is the same; the cion or part to be grafted must be close enough to the stock to admit of their branches being brought together. When seedlings are wanted for stocks the seed may be sown about the base of whatever is to furnish the cions, and can be worked when large enough, or either or both may be in pots, or of some plants the cion may merely be a branch with its stem end in a bottle, tied on the stock wherever required, and filled with water.

To apply inarching, the stock and cion are to be brought into the proper position for uniting about as shown in figure 1. The chosen branches are then brought together and the point of most natural contact marked. Then with a sharp knife smoothly cut away about one-third of the diameter on each one, when, as is preferable, they are of nearly equal size; where of unequal size the cut should only go below the bark, and in both cases be about one and a half inches long, cut so that each nicely fits the other.

After the cuts have been properly made the two parts are brought together, being at pains to see that the edges, at least on one side of each piece, are perfectly and smoothly matched, when they are to be firmly tied with any suitable material, seeing that no injury is done the buds. To prevent drying out, the cut portions are covered with grafting wax.

As the time required for uniting depends upon the age of the wood and the kind of plants operated upon, no definite rule can be followed, but after three or four weeks the wax can be carefully removed and the work examined, at the same time putting fresh ties on between the first ones, which are then removed to avoid injury to the bark. In some cases the wax can be left off, but in many it should be replaced, to remain for a similar period as the first. When the growth would seem to warrant it, in about three weeks in the case of the vine, the two members may be cut apart, as shown in figure 2. This operation will probably be the critical one of the whole proceeding, as if the union is in the least disturbed failure will result. As illustrated at *b* the first cut made in the stock shoot allows a leaf bud to remain above the junction, while the cion is cut immediately below at *a*, then after a week or so the parts having recovered and started well, the third cut *c* is made on the stock, leaving the plant in the condition desired, that is, with a vigorous stock

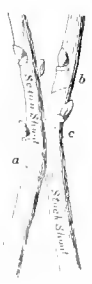


Fig. 2.

of the one variety with the improved sort of another on it.

In Grapes this method is used mostly with those grown under glass, often for the purpose of uniting the roots of two plants into one vine, to secure a more vigorous growth. Probably the easiest and most satisfactory plant for amateurs to employ for their first


Fig. 1. Inarching the Mango.

efforts is the Chrysanthemum, on which, if desired, five, six or more different varieties may be worked, with little fear of failure if done in a painstaking manner. To a proficient operator the field for inarching becomes a broad and fascinating one.

Peach Yellows in Western Michigan.

Mr. J. H. Hale, of Glastonbury, Conn., is quoted as saying that "he cures what he believes to be yellows with applications of potash, with nitrogen sometimes added." Further he says that "a tree affected with yellows is sick, and should receive treatment." We have tried Mr. Hale's specific and all other yellows cures without effect. As Mr. Hale is not located in a Peach growing region, it may be advisable to doctor sick trees in his vicinity; but with our experience with the genuine old Jersey yellows we do not care to establish a Peach yellows infirmary in our beautiful orchards.

Our experience, here in Western Michigan, with yellows, has revealed many facts regarding the disease, which may be utilized by government scientists in their investigations. We who have seen the effects of yellows, in the destruction of hundreds of thousands of beautiful Peach trees, know something of the effects and contagious character of this dreaded disease.

We have proven that the sap of an infected tree inserted in a branch of a healthy one, will convey the disease immediately; also that yellows will develope in a young tree grown from a diseased Peach pit; but pits from fruit in the advanced stages of yellows will not grow. We have found yellows equally destructive upon poor light soils and rich virgin lands, which are full of potash and of every ingredient recommended by Eastern yellows doctors as sure cures!

Scientific Professors and microscopists have made exhaustive examinations of diseased trees; and, while finding bacteria in their sap, have not been able to determine whether bacteria are the cause or effect of peach yellows. We know that by the immediate destruction of each and every tree upon the development of the first symptoms of yellows, the disease is and can be prevented, and Peaches successfully grown in localities once badly infected. By the removal of *all* diseased stock, we are again growing healthy trees and fruit, and notwithstanding the blizzard and extreme cold, prospects were never better for a full crop.—W. A. B. in Rural New Yorker.

About Summer Mulching.

E. P. POWELL, ONEIDA CO., N. Y.

It is impossible to emphasize too strongly the work of mulching. I would mulch everything from a transplanted Aster to old Apple trees. The principle it may not be possible to carry out fully on a large plan, yet that should be our aim. I am asked concerning some half mile of Evergreen hedges how it is possible to grow them so finely? My answer is we owe much to the principle of following nature in the method of trimming; but we owe more to mulching. When planted the whole was at once heavily covered for the width of the planting trench with sawdust; and from that time leaves are not only encouraged to blow under, but are crowded under. The cleaning of drives and other litter also finds the same place and use.

A large share of fruit trees planted are allowed to dry for lack of mulching. I invariably drive my wagon about as soon as spring planting is done and throw carefully about each Pear, Plum, Apple or Cherry a few shovels of chip manure, or barn manure, or both. A top dressing of this kind will not hurt any fruit tree, while if placed in with the roots the injury would be great, if it did not kill the tree outright. The mulching of Strawberries is pretty well understood, but it is equally important with all berries. However, if so planted that the cultivator can frequently run through the rows, loosening of the soil is equivalent to a mulch. The best mulch generally accessible for berries is sawdust. But it is possible to utilize all kinds of waste, weeds, old straw, tan bark, and, above all, coal ashes.

I do not believe that for general purposes we have any material much more valuable on clay soils than despised coal ashes. When it is desirable to protect trees from borers it is essential to use an open porous material, and that is precisely what we get in coal ashes. If placed bountifully about a tree it will do no damage in the way of excluding air, while it is a capital safeguard against borers. I have used it about Ash trees when they were attacked; also when the Beech trees were assailed, and always with advantage.

Mulching on Pears is of very special importance, helping to secure equality of temperature and moisture about the roots. It is of course not a specific against blight, but helps to prevent conditions favorable to the development of blight. Our Apple orchards the country over present the saddest sight, the most neglected, ragged, forlorn, unhealthy picture. The impression has been that an Apple tree above all others, is capable of taking care of itself and enduring neglect; I should far rather trust to any other fruit to fight its own battle unaided. Every Apple tree should be most carefully cleansed and the borers kept out; but above all every Apple tree should be mulched. When blight was peculiarly prevalent, I preserved two Pear orchards almost intact, and believe the chief cause of immunity was careful and constant mulching. An Apple tree well mulched will show the result in rich, dark foliage and strong growth; and strong growth is of course the basis of fine fruitage.

I do not care where you turn, the law of success in horticulture is mulch, mulch, mulch. If adhered to, a drought loses its power. Shrubbery, instead of losing half its foliage in August, stands clear and bright

into October. Most of shrubbery lawns suffer sadly during summer. Watering is of little value as a prevention except in small yards. Yet a system of irrigation may be and should be also adopted. Of that I will write hereafter. I write now to suggest the method of chief importance to save you from bitter disgust and loss of pleasure in your gardens and lawns during the dry season. Whatever may be urgent for the Eastern States is doubly important for the Western. My own experience is that in Michigan the sun burns and dries far more than in New York. The loss of shrubs and trees planted is therefore far greater.

WALKS AND JOTTINGS.

BY A. M. PURDY, PALMYRA, N. Y.

For Grubs on Strawberries. Dissolve copperas and saltpetre in water, say 4 or 5 pounds to a barrel, and sprinkle vines when ground is dry.

Improved Whitewash for Peach Trees. Add a gill of carbolic acid to a gallon of whitewash. Also throw in a piece of soap as large as a Butternut and stir up well.

"White Blackberries" have been known and tried for years—in fact, we have tried scores of them from different sections, and have yet to find one of them that is worth the time and trouble.

Summer Manuring. Stable manure may be scattered among Strawberries that have borne this year and, throw a good fork full around the Raspberry bushes in bearing this year. If land is rich and plantation young, we do not advise manuring much for first year or two, as it runs plants too much to vine and wood and too little fruit.

Not True Economy. We would not recommend any one to start an evergreen hedge with plants from the woods and pasture. First get some small plants and set them out thickly in nursery rows, and after growing a year or two set all the best and thriftiest in the hedge row where needed, and after setting, cut all back to same height and you will soon have a fine hedge.

Clover Land for Fruit. There never is danger in plowing under Clover and using such land for Raspberries and Strawberries as you propose—planting the Raspberries this fall and Strawberries next spring. But such land should be watched closely that it be not infected with grubs, and if so scatter a bushel or even two bushels of salt to the acre broad cast over the land before plowing, and same amount after plowing.

Hints for August.

Layering Grapes. If there are new canes growing next to the crown of your plants, lay them in and out of the ground, so that canes of six feet in length will pass under the soil at least three times. They can be held in bottom of trench with little forked pegs and covered over with earth. Many shrubs can be layered and increased this month. Currant cuttings should now be taken off, cut up into cuttings six to eight inches long, and set firmly into the soil up to the topmost bud.

Tips of the Black Raspberry can be layered through this month. Simply open holes with a trowel, and place tips of new growth in at an angle of 45 degrees and cover with earth.

Have all the old wood trimmed out of your Blackberry and Raspberry plantations.

If your Strawberry rows are uneven, having vacant spaces, take up plants from well-filled spaces and transplant.

Go through the Strawberries often, and train the runners along in rows.

This is a good time to scatter a little well-prepared compost along the Strawberries rows. Also put a small shovelful around each Raspberry bush, but none around Blackberries, for the latter do not need any stimulant until the plant shows exhaustion, when manure may be thrown around them late in the fall.

This is the time to give the bodies of all your trees a coat of white-wash. It destroys insects and eggs that the bodies are apt to be covered with at this time of the year.

Be sure to get your Grapes into market as soon as they color, as it is the first fruit on the stand that sells the best.

Sow grass seed for lawns now, an equal mixture of Red Top, Timothy, Orchard Grass,and White Dutch Clover, make a beautiful carpet.

Keep the Celery well hoed, and as it grows taller keep the stalks snug together and earth up around it.

If you have no Strawberry bed set a few this month, and if your soil is too heavy and stiff draw on a few loads of sand and mix thoroughly through it. If sand is not to be had, haul leaf mold from the woods, and also put on coal ashes and work in well.

Pears are ripening up this month. Most varieties are better to gather just before they are ripe, and place them on shelves or the floor in a dark, close room.

Don't allow weeds in the garden to go to seed. If you can't do better to prevent it, cut them down with a scythe or sickle.

Go through the Sweet Potatoes, and whenever vines outside of hills are taking root pull them up.

We are now arranging our flower beds for planting bulbs—Hyacinths, Tulips, Crocus, Paeonies; also hardy Perennials—Pinks, Phloxes, Spireas, &c., &c. A large space in front of our office—made soil, we are now laying off into flower beds, both for above sorts and bedding out next spring. We find a good substantial edging to be stones four to six inches through, brick set up edgewise are also good; also narrow grass sods. Box edging is splendid for beds a distance from the house, but when the foliage is wet, too strong to the olfactory organs to have too near the house.

The subsoil of our ground is gravel. This we pick up loose and over it scatter well-rotted barn yard manure, and over this sandy loam soil, taken from just below the sod of a distant sand knoll. On this we will put black mold from the woods, and then mix all up together, scattering in a little wood ashes. After planting out and just before winter sets in, we shall cover the bed with coarse barn yard manure, hauling the coarsest of this off in early spring.

This is a good time to shorten in the Evergreens to make them grow compact and stocky. Simply nip off the ends of limbs and leaders that are growing too spindling.

Vacancies in Strawberry rows can be filled up now by taking up young plants with the runners attached, and setting them in these vacancies, and training the runners along the rows.

Vacancies in Black Raspberry rows can also be filled up by laying the tips of the new growth in the row, and this fall cutting off the branch just above the ground.

If you have not done so before, be sure to pot some Strawberries, to be kept in the cold frame for spring fruiting.

Watch the flower seeds and gather as fast as ripe, as they waste very easy.

Look out for manure and make up compost heaps as fast as you collect suitable materials.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

Virginia Creeper. While, for the purposes illustrated last month this climber is very suitable, yet in many respects it is but little better than a nuisance; one is where planted against a house or other buildingswhere the temptation to use it is strong, because of the ease and rapidity of its growth. For three or four years after planting it does well with no care, but after that it must be trimmed each year. Then it affords a harboring place for birds, especially the English Sparrow, and soon the house and vine will almost certainly present an unkept and filthy appearance. To such an extent, indeed, is this true that some persons in our locality who had fine vines have cut them down. The above objections apply more to the common variety (*Ampelopsis quinquefolia*) than to the newer sorts, known as Boston or Japan Ivy (A. Roylli. or Veitchii), either of which can be recommended, as their growth is not so rank, and they cling more closely to the walls,while in color, they surpass this sort.—*Remle, Newport County, R. I.*

Propagating Clematis. I have found the growing of them from seed a fairly satisfactory way of increasing my stock. Nearly all varieties seed freely. When ripe, I separate the downy substance from the seed, and sow in a shallow box, covering with sandy soil, about a quarter of an inch, giving plenty of water, and set in a moderately warm place, where it need not be disturbed, as it will take five or six months for the seedlings to appear. When this occurs, they are shortly afterwards potted in rich, sandy soil. With good care they will be likely to bloom the second year.—*E. E. Summey, Erie County, N. Y.*

The Fruit Crop Report. This report in the July issue deserved some comment, for one thing, because of the enterprise shown in securing returns from sources so wide-spread, and also on account of the simple concise way of spreading it before the reader, giving at a glance the state of the probable supply of fruit in any section. As the summary indicates, the crop throughout the country is slightly below the average, yet it is so evenly distributed that in no section is there any general scarcity, so that, except for the usual export trade, there may be no special shipping demand. In view of this outlook, it will be wise to study up means for utilizing the crop in the best manner. This will likely be by means of evaporators, even though evaporated fruit should be cheap, yet the cost of production from one's own orchard is so low that a fair average money return may reasonably be counted upon, from the large demand. As to the reliability of the report, I should think it unnecessary to go further than to direct attention to the difference between a report like this, from disinterested well-known growers and those sent out by parties, oftentimes with the sole purpose of influencing the market in different localities.—*C. J. Gaines, Yates County, N. Y.*

Pearl Strawberry. I have read with interest the note of Mr. E. Williams in the July number, on the behavior of the Pearl on his grounds in New Jersey. We can also report unexpected satisfaction with our trial of it under the most trying circumstances. Our plants, received from the West Jersey Nursery Company in the spring of 1887, were planted on well-prepared ground with such leading, new sorts as Bubach's No. 5, Jesse, Jewell, Itasca, Great Pacific, and Townsend's 1001. The season proved the dryest and hottest known in the history of the West, yet the foliage on the Pearl remained perfect, and the first of October showed a well-filled matted row, better than anything on the plot, except Great Pacific. When the crop ripened this season it was pronounced by pickers and visitors the best in yield of the new sorts, and the evenest, smoothest, firmest-fleshed, and best in quality of any berry. This is high praise and may not be repeated another year, but as it now stands it has done admirably under the most adverse circumstances.—*J. L. Budd, Iowa Agricultural College.*

Sweet Flowering Tobacco. In the article on the cultivation of Nicotiana Affinis, it is spoken of as nearly hardy. It has proven perfectly hardy with me where the mercury went down to fifteen below zero. Four years ago I saved no seed of it, and in forking over a border early in the spring, I found the roots of it from the previous year. I cut them up same as Bouvardia roots for propagation, and every bit of them grew. I have done so every spring since, as it makes a very good plant to put around a Rhododendrons bed, or in mixed borders. —*John Renner, New Bedford, Mass.*

Fuchsias in Pots. Contrary to the usual custom of bedding out the Fuchsias in the open ground, I have them in pots plunged to the rim, and have a most beautiful showing. I have them in rather large pots, 5 to 8 inches, in very rich light soil, set in a border adjoining the wall on the north side of my house. About 100 plants, large and small in a 72 foot length of border, the larger plants overtopping the smaller; some of the smaller plants about 15 inches high, and perfect pyramids of flowers. They have been in flower continually since put out in May and make a grand display, and now July 14th, are in profuse bloom. I give them water in overhead spray daily, and they seem to like the moist atmosphere. They are mostly of this year, January, February and March started plants, struck at different times to get various sizes and a succession of best blooming, and I occasionally cut back a branch here and there to induce new wood and flowers. I expect continued bloom until frost, and by keeping them in pots with a daily syringing, a still more profuse blossoming.—*John Lane, Amateur Florist, Chicago, Ill.*

The Goat's Beard—A Fine Spiræa

Among Spiræas that die to the ground each autumn, none is more worthy of cultivation than the species known as Goat's Beard (*Spiræa aruncus*), a branch which is illustrated herewith. It is a vigorous grower, attaining in good soil to dimensions equalling three to five feet in height, and the same width, being matched in this respect hardly by another plant of its class. On this account it is of value as a plant that is almost as much at home in the shrubbery as in the herbaceous border.

The plant is prized for its beautiful foliage and habit as well as for its flowers, which latter are freely produced in large, gracefully-drooping plumes, the color being a creamy white. It should however, be noted that some forms of this plant are inferior and to be avoided. It is a native of the Alleghany and Catskill Mountains in this country, and to some parts of Europe and Asia. By procuring stock from first-class nurserymen there need be no trouble about getting the best form, for such growers will have been at pains to have secured such. In its best forms, as Mr. Robinson remarks, it is as ornamental in midsummer as the Pampas Grass, and is a valuable subject for grouping with other fine-foliaged herbaceous plants. As an individual specimen on the lawn a strong plant of this Spiræa is remarkably handsome, its neat form and clean cut foliage of good color showing finely above the green sward.

The culture of the Goat's Beard is of the most simple character. The plant succeeds in almost any situation, and yet, as with everything else, a gain comes from bestowing good treatment. If it can have a deep moist loam fairly enriched, it will ask for nothing more. It is, moreover, in common with the Astilbe and some others of the Spiræa class adapted to culture in pots. By setting the roots in good-sized pots of soil in the fall and providing several inches of drainage, they will be in shape for passing the winter in a pit. Early in the spring the pots may be brought to the greenhouse, or else later, say in May, be transferred directly out of doors for blooming. If they be then given a liberal supply of water, they will be found to grow remarkably well and carry fine and luxuriant heads of flowers as a result.

THE GOAT'S BEARD. SPIRÆA ARUNCUS.

A Convenient Fumigating Box.

W. F. LAKE, ERIE CO., N. Y.

There are but few plant growers, amateur or otherwise that are not more or less troubled by the presence of plant aphis or lice. The possessor of a greenhouse finds less difficulty in destroying them, than those having only a window garden, as Tobacco can be freely used in the former, both by fumigation and keeping it strewn under the benches, things not near so easily done in the house.

Before I had the pleasure of owning a greenhouse, growing many flowers in the window garden, I overcame this difficulty in the following manner: Procuring a large tight dry goods box at least six feet high by four square, I had the cover put on with hinges, taking care to leave no open cracks, then inside about 18 inches from the bottom, some cleats were nailed in, and on top of this a wire seive was placed on which to set the plants. (Lath put on one-half inch apart would do quite as well as wire.)

At the bottom of the box was a side-door large enough to admit a tin pan, which had a few small holes in the bottom. This I set upon four inverted flower pots in order to secure draught from below while burning. For safety, I kept a piece of zinc underneath the pan so that a stray coal dropping through the holes in the pan would not set fire to the bottom of the wooden box.

Such a box will accommodate a large number of small plants, while the box being quite high, tall plants could be easily fumigated, though of course, not so many at a time as of the small ones.

In starting the smudge, I put a handful of shavings in the bottom of the pan, and on top of this, dampened Tobacco leaves, those termed "sand leaves" will be given away by growers and are much better and stronger than stems. Care should be taken that there are no crevices in the box whereby the smoke will escape, and what leaves can be heaped upon the pan after putting in the shavings will not be found too strong for most plants.

After a few trials, one can determine just the right quantity to use in the case of plants like the Cineraria and Heliotrope, which are badly affected when too strong, making the remedy almost worse than the disease. It may be added that if the plants named be syringed, just previous to the fumigation, they will stand about the same degree of fumigating as most other kinds.

Calla Culture.—A Flower Market.

"How do you make your Callas bloom so continuously?" asked my neighbor last winter. By treating them in their growing season like very hungry little boys, said I. Also by bearing in mind that these "Daughters of the Nile" ought to be treated as nearly as possible, as though they were in their own native land. In the spring, I put the pots on their sides in a shady corner of the garden, and there the bulbs dry and rest until the last of August. This corresponds to the dry time when the freshet of the Nile has gone down, leaving the bulbs in the sun-baked earth. The last of August, get rich earth to re-pot them in, and after they begin to grow commence the feeding. You will find them the hungriest plants you ever had to deal with. I took some fine soot, last winter, made a tea of it, and filled the deep saucers once a week, alternating with hens' droppings. When we had oysters, I would tuck one or two raw ones under the soil in each pot. My bay window was gladdened by these royal lilies from February until May. I actually had to withold water to stop their blooming, fearing the plants would be too much weakened.

Detroit is a flower loving city. Rich and poor have their lawns or small front yards beautified by these lovely things. In winter the conservatories and cottage windows are bright with plants, making the cold winter less long and tedious. In the busy part of the city, where all the street car lines meet, is a long, low building, open both sides, fitted with stalls, and is devoted to fruits, vegetables and flowers. The plants are sold so reasonably that even the poorest can buy something. A walk through the market in early morning is a delight, an education in color, and love for the beautiful. One pleasant and profitable feature is the selling of rooted Annuals; Zinnas, Asters, Sweet Alyssum, etc., are sold at from six to twelve cents a dozen. The plants are small but well rooted. Often they are handed to you done up in a cool moist Burdock leaf, and can be carried safely quite a distance. The garden beds can be made bright with these well-rooted plants, without the tedious waiting and often failure from seed planting. Every city, large or small, ought to have its flower market. If the city rents the stalls they can be made profitable. Detroit's revenue for one year was $6,691. A fee from farmers' wagons, also loaded with fruits, vegetables and plants, at ten cents a morning, amounted to $3,587.20. It makes a grand opening for women. Most of the stalls in the Detroit market are attended by women and girls. They make a comfortable living and sometimes become wealthy.

SISTER GRACIOUS.

Some Points on Pansy Culture.

W. C. JENNISON, MIDDLESEX CO., MASS.

The best Pansies at any season of the year are generally obtained during rainy or damp weather, and at such times are quite likely to be soiled by muddy water spattering on them. This may be remedied by mulching with meadow moss which presents a neat appearance. But my experience is that it better be spread quite thinly among the plants, for if put on two or more inches deep, it will absorb the greater part of the rain-fall during the summer, only to be dried out in a few days without allowing much water to reach the roots. A green worm, closely resembling the rose-leaf slug, made its appearance on some of the Pansies this year. I noticed quite a number of blossoms and leaves looking a

little ragged, but could not see anything to make them so, till finally upon lifting the branches so as to see all of the ground under them, found quite a lot of these worms lying at the base of the plants and on the underside of the oldest leaves. These worms seem to do most of their eating during the night and while the leaves are wet. Persistent hunting out and killing by hand is a sure way of getting rid of them, and where one has only a few plants it is probably the easiest, but where raised on a large scale something applied which would keep them off or kill them, and at the same time not injure the blossoms would be worth considerable, should the plague become general and very destructive.

Having grown Pansies in about all the different degrees of shade and sunlight, I would say if you wish to raise the largest and finest colored blooms set them where they will be sheltered from fierce winds and in the sun all, or nearly all day. Make the ground rich with rotted manure and a little phosphate; where this cannot be had, use old rotted leaf mold with phosphate. Fresh manure may be used but is more heating, and the soil where this is used will not hold the moisture as well.

Pansy plants, from spring-sown seed, will live over winter without much care, but those from fall-sown seed that have been wintered over in cold frames need to have most of the large branches broken off in August so the new ones will have a chance to grow. Treated with a light covering of old flower stalks thrown over them after the ground freezes, they winter nicely. In exposed situations, coarse straw held in place by a few Evergreen branches is better.

An Effective Home-made Lawn or Garden Sprinkler.

L. L. ESENHOWER, BERKS CO., PA.

I have a lawn sprinkler that does effective work throwing water further than the more expensive rotary sprinkler, yet the cost is but a trifle, and this I would like to describe to the readers of POPULAR GARDENING.

It is to be supposed that you already possess a garden hose; now tie the nozzle of it to a stake about five feet long, driven into the ground to point directly upward; then take a short piece of one-fourth inch rubber tubing about 12 to 18 inches long, according to the amount of pressure you have, (the greater the pressure the shorter the tubing must be), and strip it over the nozzle. At the other end of this rubber tube, insert a short piece of brass tubing with a very small bore, in most cases one-sixteenth of an inch is large enough, and about one inch long; bevel off the front end at an angle of 45 degrees; ream out this brass tube in such a way that the front end will be a trifle smaller than the back. Any watch or clock maker will do this for a trifle. This is to make the water act on the front the most.

An Effective Home-Made Sprinkler.

After tying all parts securely, turn on the water, and you will be astonished at the actions of this short piece of hose, there is not a conceivable twist, curve or manœuver it does not perform. The first one we made caused such amusement that crowds gathered on the sidewalk to watch its antics on the lawn, many wondering where the power came from to throw water in that style.

If you do not want to be put to the trouble and expense of the small brass tube, you can put a wooden plug in the end of the rubber tube, and cut a very small slit in the hose right back of the wooden plug, as shown in the small cut; this also gives good results but not as good as the brass tube.

This sprinkler is very well adapted for the vegetable garden; set it in the evening and let it sprinkle all night. Ours gave us excellent crops of vegetables while our neighbors' crops were destroyed by the drought. It throws water in a radius of 20 feet from the center. It can be used in one place one night and be placed in another the next. We have been thinking of using a number of them connected so as to cover a large area, thus getting good crops of vegetables, etc., when the dry weather would make it almost impossible to obtain any.

Preparing Hot-bed and Potting Loam.

The majority of all plants grown in pots are well satisfied to grow in a soil prepared as follows: At any time before winter, but August is the preferable time, gather in a pile, sod, in whatever quantity is required. This may be procured from the fence corners of cultivated plots, from the surface of freshly-plowed and harrowed pasture land, or from the road-side. Any sod, if not too heavy a soil, is good.

This sod should then lay in a pile for a year or more, watering it occasionally to promote decay, when by throwing the mass about, it is ready for use, by adding a third in bulk of well-rotted manure.

While such a course requires but little trouble, yet, for ourselves, we prefer taking more time and pains in the preparation of our potting soil, and so build the material into a neat oblong pile, some four feet high, extending it as necessary. First, there is placed a four-inch layer of sod, then three inches of green cow manure, thus alternating until a sufficient quantity is prepared; when convenient to be obtained from breweries, we like an addition of about a quarter of spent hops, which tend to lighten the soil, to three-quarters manure, this not being absolutely essential, however.

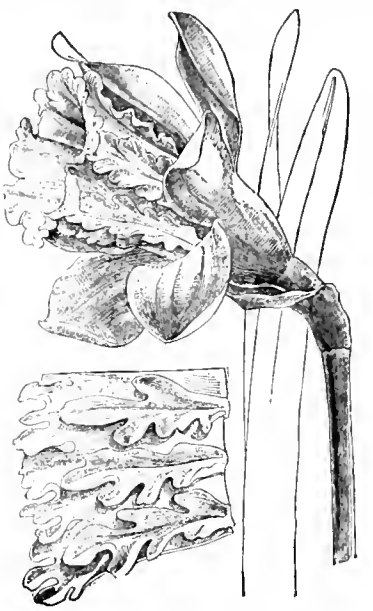
The top of our pile is left cup-shaped, and is filled with water a number of times, especially in a dry season. After laying till the following spring, the whole mass is thrown over, cutting it as finely as possible, then laying till autumn, when it is in fit condition for use in preparing for winter. With each succeeding year, the unused portion continues to improve.

Such a prepared soil also is a splendid material with which to top-dress crops of all kinds, as well as for applying in the hill, containing as it does to a high degree, the essential elements for vigorous plant-growth. For potting purposes, the addition of a little sand or finely-sifted coal ashes, may be beneficial in lightening it somewhat, especially for Fuchsias, Begonias, Ferns, and similar soft variety sorts.

Daffodil With Crested Corona.

In a recent issue of the London Gardener's Chronicle there appeared an illustration of a singularly formed Daffodil, and which we have had re-engraved for our columns as annexed. This curious Daffodil appeared among the collection of plants growing on a lawn in Limerick County.

The "frill," or outgrowth is produced from the outer surface of the corona, which has thus a very peculiar appearance. Mr. Gabbett, the owner, reports that six blooms were so affected, and that in former years, when the weather was more propitious, the frilling was more pronounced. Mr. Gabbett had observed this peculiarity for four or five years. We have not learned of any attempt to improve on this peculiarity, for the purpose of creating a fixed type of the variation, which we should think is well worth striving for.



A Singular Daffodil having a Crested Corona.

751. **Blackberry Propagation.** One plan is to cut down the roots all around the plants a few feet from the stalks with a sharp spade, thus cutting them off where they will send up shoots, but this is a rude plan, and the plants are no better in the long run, while much more inconvenient to handle. The best plan is to take up the roots in the fall, cut them up in pieces of two or three inches in length, pack in fine sand so that they don't touch each other. Keep in a cellar in a damp condition. In the spring sow them in drills six inches broad in rows four feet apart, covering two or three inches deep. The root pieces should not be closer than three inches to make strong plants. If this is not done in the fall, they can be taken up in the spring, but not with as good success.—S. M.

755. **Grape Vines from Cuttings.** I make my cuttings in the fall from six to ten inches long, according to the joints. Cut sloping under a bud close below, with the point on the side of the eye. Cut half an inch above the upper bud in like manner. Tie in bundles of 100 or 150 each. Make a trench so deep that they will be covered six inches when set in and the ground put on them. In the spring as soon as the ground can be got into, not too wet, take them up and return to the pit with the tops down, until the ground gets warm. In rows four feet apart, cut down with a spade at an angle of forty-five degrees, lay the cuttings in, three inches apart with the top bud half an inch below the surface, draw the earth on them, pressing firmly. Working them thoroughly I deem better than mulching. If this is not done then a mulch will be beneficial.—S. M.

779. **Best Keeping Grapes.** The following are good winter keepers: Agawam, Brighton, Canada, Croton, Catawba, Duchess, Iona, Jefferson, Lindley, Merrimac, Rebecca, Salem, Vergennes, Wilder, and Walter.—D. S. MARVIN.

734. **Filbert Culture.** The bushes should have at least 10 feet between them. Will bear at six years of age. Pecan, Spanish Chestnuts and English Walnuts though, would prove equally hardy, while doubly remunerative.—MRS. J. S. R. THOMSON, *Spartan Co., S. C.*

669. **Roses—Treatment and Temperature.** No. 1, It is preferable to plant the Roses on the tables as early in June as you can, keeping them as cool as possible and admitting all the ventilation possible night and day. No. 2. Perle, Bride, Niphetos, Mermet, Beauty and LaFrance will grow well together in about the same temperature. Mme. de Watteville, Mme. Cusin, Papa Gontier, Sunset, a little lower temperature than the first named. Bon Silene, Safrano, Brabant, Gloire de Dijon, a little cooler than the second named. A night temperature of 52° to 62°, with other matters attended to, produces good Roses.—CHAS. ANDERSON, *Queens Co., N. Y.*

741. **Black Knot on Plums.** Examine the trees occasionally or frequently during the spring and cut off every branch or twig that shows a knot or tumor and burn them. See that no knots or tumors are on the wild trees in your immediate vicinity, or else all your labor will be in vain.

Morning Glories.

I watch them as they climb the trellis o'er,
To look out on the world in glad surprise,
Seeming content to ask for nothing more;
There are the blue ones, like a child's dear eyes,
That, startled as the sudden breezes blow,
Half shyly, half in fear, glance to and fro.

Here is a rosy tinted bloom whose cheek
Would put to shame a maiden's radiant flush—
Perhaps a roving sunbeam did but seek
To steal a morning kiss, and hence the blush;
Or it may be her listening heart has heard
The echoing love song of some wooing bird.

And there a blossom, delicate and white,
Quivers and trembles in the early day,
As if the long, dark hours throughout the night
Had wearied her and chased her bloom away;
Or else a swift, sharp pang, a sudden fear
Has left her grieving, pale and troubled, here.

Jennie Noonan Wheless.

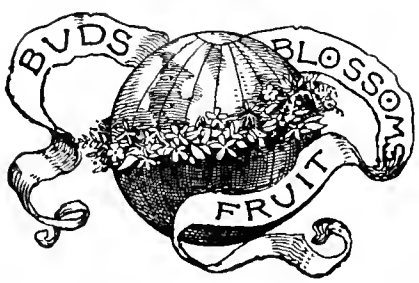
Rain.

With a cadence soft and low
Falls the rain!
All the heavy grasses seem
Bowed with pain;
While the tender flowers droop
To the sod,
Bent like penitents that kneel
To their God;
Oh! my garden brings a joy
To my heart,
As I stand and watch the rain.

Lee C. Harby.

It is evening in the park,
And the softly coming dark
Sees the toads
Snipping up the helpless flies,
Each a dainty, juicy prize,
In the roads.

Washington Critic.



Repair the glass now.

A fibrous soil for Carnations.

Asters begin to fill their place.

For spring greens sow some Spinach.

Subscriptions may begin with any issue.

Which is it, a clean lawn or a weedy one?

Horticultural Hall at the Fair will need your help.

Would you have Pansies? August is the time to sow.

It is painful to see Gladioluses bending to the ground for want of supports.

Evergreens may safely be moved this month, but all the better if the weather be damp.

Lilies may be injured by application of rank cow manure through the breeding of insects.

Hot weather never affects our appreciation of new subscribers. We have received hundreds recently.

Hail Insurance. It would have to be a pretty severe hail storm that would injure Grapes that are properly bagged.

The better way is to allow resting plants to start some new growth in the old pots before repotting into their winter quarters.

A neglected roadside is inexcusable. We trust all our readers will take the lead in reforming them with scythe and weed spud as needed.

The hardy Gaillardia promises to become a popular sort for the multitude. Easy of growth and it is nothing less than exceedingly showy.

Summer Flowers have been greatly added to through Clematis Jackmanii becoming so common. What hardy plant can equal a finely grown specimen of it in full bloom?

Improved Horticulture would take a perceptible stride forward if for each reader POPULAR GARDENING AND FRUIT GROWING now has, the list should be increased by anywhere from two to a dozen. It can be done.

Refuse Apples as Fuel. I burnt bushels of decayed Apples this winter in the house furnace, without smell, and lessening use of other fuel, while destroying all insects in the fruit, which was the main object in firing it.—*Stephen Power.*

Purple or Copper Beech Leaves are made up with corsage bouquets of Niphetos Roses. Sheaves of Roses, tied around with their natural stems like a standing sheaf of Wheat, are the newest fancy for center piece decoration to the table.—Public Ledger.

A fine Auratum. I have an Auratum Lily, now in bloom in an eight-inch pot, 30-inch stalk, with five flowers remarkable for size, 17 inches across the face from tip to tip. Wish I could keep it and take to the annual meeting at New York next month.—JOHN LANE.

As presents, flowers are always suitable, because they are an assertion that a ray of beauty outvalues all the utilities of the world. Their gay nature contrasts with the somewhat stern countenance of ordinary nature; they are like music heard out of a workhouse.

Persimmons in Florida. One of the prettiest sights I ever saw was a Japan Persimmon 30 feet high, spread some 15 feet, in January, with not a leaf on it, but carrying about five bushels of fine bright red fruit—a sight once seen long to be remembered.—ROBERT REID, *Orange Co., Fla.*

Collection of Lilies. Mr. Thomas S. Ware, of Tottenham, London, Eng., writes: "I have one of the best collection of Lilies in Europe, including at least ten varieties of Superbum and thirty or more of Paradalinum, all more or less distinct; also have two forms of Washingtonianum, etc.—*F. E. B.*

Petunias. I am taking up a few single Petunias for winter flowering. I shall grow them stocky, in order to have good strong, well-rooted plants. I had a white and a pink in one pot, last winter. They blossomed abundantly all winter, and gave more satisfaction than any of our other plants.—*L. L.*

Onions for Seed. Scallions (some call them scullions) or any Onion having a stiff, strong neck should never be saved for seed. They are very apt to propagate that kind of an Onion. It is true that the season and soil have something do with it, but the parentage of the seed more.—*W. J. J., Fairfield Co., Conn.*

Dealing with Sparrows in a way which Mr. E. P. Powell, of Clinton, N. Y. tells of having practiced, may be well worth trying: He took a kettle and put in it some wetted meal and Paris green, and hung it on the trellis; what effect it had on the birds he cannot say, but they quit at once, and did not touch a Grape afterwards.

For Winter Flowers. In cutting back and repotting large plants of Fuchsia, Calceolaria, and the like, the rule applying to nearly all plants, is that it is an advantage to use a smaller pot, in some cases, only half the size of the one from which they were taken, shifting as required by growth. Many fine plants are annually lost by a disregard of this simple matter.—*W. F. L.*

Oats to Protect Flowers. Sow Oats in Strawberry and flower beds, early enough so they will be four or six inches high when hard frosts come. They will choke down the late weeds, and the frosts will cut down the oats and leave the frosted foliage as a covering and protection to the plants. It is easily applied, and requires no removal as other coverings do.—*Elder's Wife.*

Flower pots for winter use should now be looked to. Some new ones will be needed likely, and those needed, if ordered at this slack time, many times can be had at reduced prices. To free the old ones from the adhering greenish substance, and to wash thoroughly, I boil in soap-suds, having some lye added. Besides increased vigor of plant growth, there is also an important gain in appearance, not obtainable in pots covered with mold and slime, with a possible chance of an injurious effect on human life.

Native Lilies. There is now in my garden, June, 29th, a Lily six and a half feet high, with eight large flowers, and fifteen buds. It is a Humboldtii, but entirely unspotted, light orange petals, very thick and glossy. It was found with one other like it, among a large number of the common spotted Humboldtii in Yuba County, Cal. One had forty flowers, the other nearly as many. Are our florists testing these and other native species of Lilies as thoroughly as so important a species would seem to deserve?—*Fanny E. Briggs.*

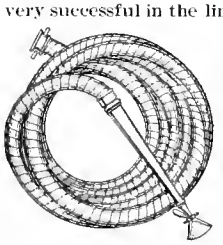
French Flower Hood. On the opposite page is shown a device employed by French gardeners for protecting their tree Roses and other choice flowers from the midday sun and from rain. It will be observed that the frame is of heavy wire, bent first to form a circular base, from which the supporting end extends downward for attaching to the plant stake. Crosswise of the circular part arises a wire, shaped for giving the cover, which may consist of any light fabric, a slightly conical form. With the intense heat of our summer sun, such a device or a modified form would often prove of service.

"Quince Culture." In a volume of 144 pages bearing this title the author, Mr. W. W. Meech, of Vineland, N. J., gives the first separate work on the cultivation of the Quince that has ever appeared. In its scope it is full and comprehensive, dealing with the subject from all practical standpoints, and employing 122 engravings to elucidate the text. Mr. Meech is well qualified to treat this subject, being a grower of Quinces for market, the introducer of Meech's Prolific, and secretary of the Vineland Horticultural Society. O. Judd Co., publishers; price, $1.00. It may be ordered from this office.

A Non-kinking Hose. At the State Farm, Geneva, N. Y., we saw a non-kinking rubber garden hose, that possesses some advantages. Everyone knows that the giving away of a hose is in this order, a kink, a break, then a leak. But the hose referred to is prevented from kinking by being armored with galvanized spring steel wire wound around it spirally as shown in the engraving, and which entirely does away with short bends and kinks. It also protects the hose from ordinary wear. This hose has found its way into the hands of dealers, and may be had for a cost of about sixteen cents per foot.

The Leaves in Good Shape. A comforting fact for fruit-growers lies in this, that the foliage of fruit trees is generally in so healthy a condition, as a brief recent run through different sections shows. Not for several years has so little trouble been experienced from worms, blight, yellows, etc. Many growers have practiced spraying their trees, and in general given better care and herein probably lies the secret of the unwonted healthfulness noticeable. As an indication of a good crop, many cooper shops are working to their full capacity. The Cook fruit gatherer is being used to some extent, it being practical and more expeditious than hand work.—*Virgil Bogue.*

Work and Happiness. In his own unique and happy style Mr. A. I. Root, of Medina, Ohio, has written a series of practical articles entitled "What to Do, and How to be Happy while Doing It," and these he has recently brought out in a book, a copy of which has reached our table. The work relates mainly to matters of rural art and gardening, and consists, as the author himself says, of "suggestions to those out of employment on how to find something to do, right at home; how to be your own boss, and how to enjoy your work." Mr. Root himself has been very successful in the lines he here treats upon, and it would be strange if every reader should not find the book profitable for its practical not to say its moral and religious ideas. Pages, 188; price, 62 cents post-paid. To be had from POPULAR GARDENING office.



A Non-kinking Hose.

Calandrina Occidentalis. Two years ago I received a plant brought from a peak on the coast, to which Mr. Meehan gave the above name, and said it was only known very recently. When not in bloom it would easily be mistaken for a Crassula, for the thick fleshy leaves form a rosette as regular and compact as the old plant commonly known as "Hen and Chickens," and throws out runners with off-shoots in the same way. The bloom-stems start from under each leaf of the lower rows, and at first are covered by a curious little fringed bract that looks like a small green bug. Mine had three rows of flower-stems. Flowers, crimson-rose, not as pretty as some Calandrina species. The leaves are long and narrow, broadening towards the end, and ending abruptly in a point.—*Fanny E. Briggs, Clarke Co., Wash. Ter.*

Protection for Fruit Growers. An exchange asks "Why should sheep or horse stealing be reckoned a crime, and the stealing of fruit and garden truck be considered a joke?" New York has a statue which covers the ground and may be worthy of copying by other states. One of its sections is as follows: Any person who wilfully

enters without the consent of the owner or occupant, any orchard, fruit garden, vineyard, or ground whereon is cultivated any fruit, with intent to take, injure or destroy anything there growing or grown; or cuts down, destroys or injures any shrub, tree or vine growing within any such orchard, garden, vineyard, or upon any such ground, or any building, frame or erection thereon, is punishable by imprisonment not exceeding six months, or a fine not exceeding two hundred and fifty dollars, or both.

Muck as a Fertilizer. In speaking of this material, which in some section is not appreciated to its full value, a correspondent says: This season, when swamps are dryest, is the one in which to secure a store of muck. While there is a great difference in its manurial value, there are few bogs that do not afford a muck that will pay for hauling. It can be applied with advantage to all sandy and gravelly soils, and can be composted with other manures and plowed under in all soils. As it loses nearly half its weight by evaporation, it is better to allow it to remain exposed to the air, before carting, thus saving half the cost, as an absorbent peat is unrivalled; thrown over a pile of manure, it retains the ammonia, thrown into the cow-yard, the liquid manure is saved. A peat or muck bog is a "mine" of wealth, on any place, in the way of more profitable crops.

Heliotrope. A few practical hints on the management of this general favorite from one of our readers who is very successful, will be appreciated by others. "I am at present nicking, that is, partially breaking some Heliotrope branches, for cuttings, to furnish plants for next winter's blossoms. In a few days the break is hardened, and the cuttings can be entirely broken off, and placed in the ground, in a shady place. Pack the ground firmly around the cuttings. I usually put them on the east or north side of the parent plant. If this operation can be performed during wet weather, the cutting will need no further care, except keeping in good shape by pinching back tall shoots. If the weather is dry, wet the ground thoroughly before putting in the cutting. Moisture is essential in growing Heliotropes well, and one is amply repaid for the trouble of watering frequently by the thrifty appearance and abundant bloom.—*L. L., Williamsville, N. Y.*

Curiosities of Plant Life. It has been shown by Prof. Schubeler, a Norwegian plant geographer, that most plants in high latitudes produce much larger and heavier seeds than in warmer regions near the equator. This effect he attributes to the prolonged influence of sunlight during the long summer days of the high latitudes. The difference in seed development was very remarkable in some cases. Dwarf Beans taken from Christiana to Drontheim—less than four degrees further north—gained more than sixty per cent in weight, and Thyme from Lyons, when planted at Drontheim, showed a gain of seventy-one per cent. The grain of northern fields is heavier than when it grows in more southerly localities, and seed from Norway planted at Breslau decreased greatly in the first year. The leaves, also, of most plants are larger and more deeply colored in higher latitudes, as was first noticed by Griesbach and Martins. This is true of flowers, many of which are white in southern climates become violet in the far north.

Blue Hydrangeas. When of a clear color, blue Hydrangeas never fail to interest the flower lover, and especially the amateur who may be in a quandary as to how they are produced. To secure good results the common pink one after blooming is cut down to two or three eyes on each stem; as growth begins the soil is shaken off and the large roots shortened and then placed in suitably sized pots, using a strong soil in which, for each bushel a quarter of a pound of powdered sulphate of iron is thoroughly mixed. Pot firmly, keep inside till rooted, then move outside till cold weather. Some position free from frost is required for the winter, with but little water given. Start early or late according as required, by placing in heat with plenty of water. While growing freely and before the flower heads show themselves, water alternately with water, in which a teaspoonful of powdered alum for each quart is dissolved, gradually increasing the strength. Use weak manure water at times. Syringe daily; never allow to get dry.—*Remle, Newport, R. I.*

The Bean Weevil in certain sections is quite troublesome. Prof. W. R. Lazenby, of the Ohio Experiment Station, says: "The larvæ and pupa of this weevil, *Bruchus fabæ*, are similar to those of the Pea weevil, except that they are somewhat smaller and a larger number of larvæ (5 to 15) is found in a single Bean. The female deposits her eggs on the outside of the young Bean pod. These eggs soon hatch and the minute worm or larvæ soon finds its way to the young Bean. One cannot tell from looking at the Bean whether the larvæ is within or not, especially with Beans of dark color, and when only two or three weevils are found in a Bean it will usually grow. Where more than two or three are found, although the germs may be uninjured, yet the seed fails to produce a vigorous plant. As a rule the beetles do not appear till spring, so there is

A French Flower Hood.

the same danger of introducing them in the case of seed Beans as in the case of the Pea weevil. There is one way by which this pest, like the Pea weevil, can be exterminated. This is to refrain from planting the Bean for one year, and then use good seed from some section where the insect is not known. If all farmers and gardeners would take united action, there is no doubt but that both the Bean weevil and the Pea weevil might be completely exterminated.

Plants of the Easiest Culture. Even those kinds which are commonly reputed to be of easy management succeed much the better for receiving good attention. With a very moderate outlay of time and trouble, many of the showy, soft-wooded flowering plants may be successfully grown. As a beginning, might be suggested such sorts as Petunias, Geraniums, Fuchsias, Lantanas, Heliotropes, and similar sorts, including such as Chrysanthemums, Carnations, etc., which are grown out of doors during the summer. Summer treatment requires plenty of air, moisture, and partial shade. Attention to these details, with the regular study of POPULAR GARDENING will soon enable one to grow "good things," well. Succulents, as Cacti, etc., and they alone, will do fairly, when somewhat neglected, and to these should those, who cannot give the required care, confine their efforts—*C. B. J.*

The Long John Strawberry. Mr. John Burdette, of La Salle, N. Y., a neighbor of the writer's, is a retired fruit grower, who in his time has been very successful and acquired a wide local fame as an intelligent Peach and Strawberry grower. Although he has disposed by sale of his former main fruit farm and lets his present one, he still gratifies his love for fruit culture by tilling an acre or two of land which surrounds his home. Mr. Burdette is the originator of the remarkable strawberry named in the title, and this he continues to cultivate here to the extent of about half an acre. Being a grower of fruit for market, and not a nurseryman, he has never taken pains to disseminate this variety, in fact, with finding it much more profitable than the Wilson and other sorts grown in this section; he, as a market-man, has naturally not sought to have this valuable sort planted outside of his own grounds. In disposing of the fruit in the Buffalo market he has catered mainly to a select trade, and has never failed to secure from two to ten cents more per quart than for the Wilson. Much of the fruit sent to market from his plat of the Long John this year brought 25 cents per quart at retail. It is both a larger and sweeter berry than the Wilson and fully as productive, forming immense stools with few runners, and bearing each a large mass of strong healthy foliage. Its capacity for producing large handsome fruit to the end of the season is its most marked characteristic, "the last berries being larger than the Wilson's first one's," to put the reference to this matter in the originator's own terms. The writer has had numerous opportunities of seeing the fruit of this local variety from first to last through the present season, and in the interest of improved fruit culture he would be glad to see it tried in other sections. We presume the originator would not object to disposing of some plants for this purpose, although he has not been consulted by us relative to the matter.

Fashions in Flowers About New York.

To the retail florist, the city is now the abomination of desolations. His chief—almost his only work—is in making steamer souvenirs for his departing customers. The spring and early summer crops of weddings are over—gone are school commencements, and the funeral orders are comparatively light. The commencements did not call for any elaborate decorations, but a great many flowers were presented to graduates, in most cases taking the form of baskets. Where there was any decorations for these commencements it usually took the form of Palms, and, like last year, the outdoor flowering shrubs were largely used. Field Daisies, too, have been largely used. At one very pretty suburban wedding, the church was literally banked with Daisies and Yellow Rudbeckias, a very inexpensive adornment but an exceedingly effective one. Since white Lilacs and Lily of the Valley are out of season Roses have taken the lead with brides. The bouquets are not quite so large as they were. There is a little Lily of the Valley in—forced—but it is comparatively scarce.

Sweet Peas were much favored by sweet girl graduates both in baskets and in bunches; they seem particularly appropriate for such occasions. At one recent wedding the same flowers were carried by the bridesmaids; they were arranged in big sun hats, which were curled up into basket shape, and carried over the arm by strings of pale-tinted watered ribbon.

Water Lilies now take part in some decorative features. Arranged in low, rather flat vessels, they are charming for table use, when lightened by Grasses, Rushes and Papyrus. Mr. Hodgson, who during the summer has his principal place at Newport, grows a good many Lilies, and in fact makes a specialty of them. The rich rose-tinted Devoniensis is especially admired, and also the softer pink of the Sacred Lotus, which people are only beginning to appreciate as they ought. But Water Lilies must never be mixed with anything but aquatic plants, or the special significance is lost.

Some of the street sellers down near the ferries make a specialty of red Carnations for the button-hole; this flower has been adopted as a Democratic emblem, so the patriots of that party make a point of wearing one.

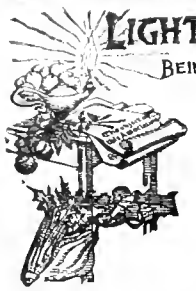
Large, coarse straw baskets filled with old-fashioned pink Paeonies make a handsome gift; These once-despised flowers are much appreciated now; they are considered very artistic. Single Dahlias are admired too; they come in such rich velvety colors. During the latter part of June, flowers became so scarce that everything was pressed into service. But the up-town florists say that now there is absolutely nothing doing; it is hardly worth while to open the stores. During the dull season the down-town and less fashionable florists seem to do the best, as their regular patrons do not all fly to the summer resorts.

Funeral designs? They are not entirely out of date, though more is done with loose flowers; but there is nothing very original about them. Some very pretty effects are produced with the silvery leaves of the Leucadendroi; frequently wreaths are simply made of this foliage. They are suitable for old people. Occasionally the leaves are laid on other foliage or flowers, such as a hero's wreath on a pillow. Designs of Pansies and Heliotrope are frequently chosen for the aged, though they are difficult to make artistically without something for relief.

A good many young men are wearing a bunch of four or five blue Corn-flowers in the button-hole; it is said to be as British as the Gardenia.

If the fashion of street corsage bunches is going, it certainly dies very hard. A bunch of field flowers worn at the belt is general. Field flowers have been very popular and are still, in spite of their excessive cheapness.

EMILY LOUISE TALPIN.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

The Best Orchard for the market is the young orchard.—*Bell.*

New Fruits—Why they Fail. One reason is that originators look more to the quality of the fruit than to hardiness and adaptation for the country at large.—*Kansas Review.*

Acquaintance with Insects. Secretary Goodman of the Missouri State Society, is urging his society to offer premiums for collections of insects, and wisely thinks it an especially good work for young people.

Pomace for Milch Cows. At a meeting of the Boonville, Mo. Horticultural Society, it was generally agreed that Pomace freely fed to milch cows would dry them up, that from sweet apples being the least harmful. Mr. Ent said that in running his cider mill, at Amazonia, the whole town was dry on one occasion, and he nearly got himself involved in a law suit.

The Northern Spy Apple. Mr. E. Moody in speaking before the Western N. Y. Horticultural Society, of this variety which is so often defective on crowded trees, said it would yet become very profitable when we make up our minds to thin it thoroughly, and that if we would take off from three-fourths to seven-eighths in time we would get nearly as much in measure, and twice the price of any other apple we grow.

Fruit in America. In no city in Europe can so fine fruit be bought as can be found in New York, and in no country in Europe is fruit within the means of the working classes as it is in our own. American nurserymen may congratulate themselves that, owing to their efforts, there is produced in no other country in the civilized world fruit of so fine a quality, and in such immense quantities and so wonderfully cheap as in our own.—*Irwin Rouse's paper at Nurserymen's Meeting.*

Twenty-five Dollars Profit. At the last meeting of the Franklin, Mass. Farmers' Club, D. C. Colton told of his planting half an acre to Potatoes and garden truck. He paid for fertilizer, seeds, cultivating, marketing, taxes, etc., $45, and added to the expenses $25 for interest. He received $15 for the Potatoes and $80 for garden truck, leaving a profit of $25 over and above the interest. The second year he let it out at halves, and his expenses were $7.50 and receipts $25, so that it did not pay the interest.

Charles W. Garfield. It pains us to learn on direct authority, that this accomplished horticulturist has been obliged, on account of ill health, to resign his offices in various Horticultural Societies. These include the Secretaryships of both the American Pomological Societies, and the Michigan State Horticultural Society, and the Presidency of the Grand River Valley Horticuttural Society. It is to be hoped, that the rest he is now taking from his arduous duties, will secure to him a full return of health, and to horticulture the renewed services of an efficient society worker.

Improvement Association. The Alton, Ills. Improvement Association, has engaged Mr. J. G. George, of St. Louis, to lay off its forty acres, adjoining Middletown, into suburban lots and tracts. The property will not be laid off at right angles, but in graceful curves to correspond with the contour of the grounds. The result will be a lovely suburban retreat, with winding avenues and shady streets, with parks and fountains and all the attractions of nature, including a beautiful view of the river. In addition, the residents of this favored locality will have all the advantages of city life, including water works, electric lights, street cars, and the best of sewerage and drainage. It will become the most delightful residence locality within fifty miles of St. Louis. The plans of the Alton Improvement Association, to which their new street railway is but a preliminary step, are on a grand scale, and will work a revolution in Alton, which cannot but be appreciated.

Forcing the Onion Crop. It would do to apply muriate of potash to the Onion bed, but from my experience I should prefer the sulphate of potash. The muriate effects the quality of the Onions, and they will not keep when ripe, if quantities of muriate of potash have been applied. Of the sulphate, 300 to 500 pounds per acre would be a good dressing broadcast and hoed in, applied when the Onion tops are perfectly dry; otherwise, it might burn the tops. Always apply nitrate of soda to Onions while growing, using 100 pounds per acre at each application. The first time it is put on as soon as Onions are well up, and again when the leaves are in their first double. I always put it on just before rain, or during one, and have never burnt or effected the tops other than to make them grow faster. Try it once and you will always do it—*T. F. Baker, President New Jersey Horticultural Society.*

Society of American Florists. The Fourth Annual meeting of this vigorous society will take place in Cooper Union hall, junction of 3rd Avenue, 4th Avenue and 5th Street, New York city, from the 21st to 24th of the present month, while the exhibits will be located in Nillson hall, 15th Street, between 3rd and 4th Avenues. A more elaborate programme than that for the coming meeting has never, to our knowledge, been given forth by any Horticultural Society. Copies of the same may be obtained by addressing the Secretary, W. J. Stewart, Boston, Mass. The headquarters of the Society will be held at the Fifth Avenue Hotel. The Treasurer and Secretary will be at the committee room on Monday evening, August 20th, from 8 to 10 P. M., where they will be prepared to receive the membership fees ($2.00) from all those who have not already paid. But to avoid the rush and inconvenience, members are advised to send postal order, or check, for the amount of their dues to the Treasurer or Secretary before the date of Convention. The Society's badge and receipt will be given in return. Those desiring to exhibit, should correspond at once with John Thorpe, Pearl River, N. Y., who will give particulars and all information relating thereto.

Marketing Grapes. Mr. J. H. Skinner gave the following points, based on the practice in the famous Chautauqua County Vineyards, before his Horticultural Society, some time since: The grapes are all picked by girls. The pickers each have a number; and in picking, each one, on filling a basket, marks with the picking shears her number on the handle. In this way the responsibility for any careless picking can be traced. Not how much, but how well is the rule. The picker is not allowed to touch the bunches with the hand, but to handle them by the stem. In packing, the clusters are lifted with thumb and finger, and with the sharp pointed grape scissors, all green, imperfect or bruised berries are deftly removed. Thus the bloom on the grapes is preserved. The fruit, after picking, stands three or four days to wilt, before packing. Of 10,000 baskets sold last season, the average weight was eight and seven-tenths pounds per basket. None but perfectly seasoned baskets are used; green baskets causing mold. Where Concords have been picked two weeks or over in the warm fall weather, all the cracked and bruised berries will show some mold, but as in picking all these are scrupulously removed, no harm is done. The Concord is never fit for shipping long distances, except it has been first carefully picked, then wilted, and then packed. The packers soon learn to lay in the clusters so as to fill the baskets just level.

French Nurseries as Seen by an American Nurseryman. Mr. Irving Rouse in a paper read at the recent meeting of the Society of American Nurserymen, related some of his observations on a trip as follows: The first thing that strikes an observer, he said was the lack of implements considered necessary on this side of the Atlantic; no cultivators, no harrows, no plows, and no horses with which to work them. Not one nurseryman in ten owns a horse, or has any use for one. As the Irishman said, "The ground is plowed with a spade." With the assistance of mattocks, it is also cultivated with a spade. No use for tree or seedling diggers. It seems hardly credible, but a proprietor of a nursery of over 200 acres, said a plow had not touched his ground in more than fifty years. As horses are not used, all the land can be utilized; no fence corners are left untilled. Our deep system of cultivation is, of course, not possible; the only thing that can be done is to keep the ground clean and surface loosened up by the use of hoes. At great expense the ground is manured very heavily; the fertilizers being carried from the compost heaps in baskets upon the backs of workmen. If some of our people, who think they have a hard time, could see women packing out manure at 40 cents a day, for 12 hours' work, they would conclude that there were people worse off than they, and a worse country to live in than the United States. Labor is cheap, but land is high, $1,000 per acre being the average price near the large towns. The dearness of land and the cheapness of labor account for the lack of labor-saving machinery. The tree agent and dealer are unknown in France; most of the orders being sent direct to the nurseries. A good deal of stock, however, is sold at the fall fairs. The peasants come in from the surrounding country with cart loads of trees, and the nurserymen say, that the peasant seller always has on hand any sort the customer may ask for. It was the opinion of Mr. Rouse that the temptation to substitute under the whole system is greater than under the agent and dealer plans.

Women as Berry-Growers.

[Paper by Mrs. O. H. Root, Fondulac Co., Wis.]

Can a woman make a living raising berries? Some would say, yes, if she could do all the work herself. Others would say, no, for she would be obliged to hire a man to look after things, and keep a team besides, and there would not be profit enough to pay the extra expense.

Capacity for the Work Let us reason this point a moment. How many grain, stock, or fruit farmers are there who do all the work themselves? The majority keep help and still provide comfortably for their families. The work that needs a team will pay for itself. It is keeping the horse in front of a carriage instead of a cultivator, that makes the team too expensive for this business. Berry-growing, then, does pay for the work, whether the grower be a man or a woman.

But, has a woman the capacity for managing hired help? Are out-door laborers more difficult to manage than indoor? Cannot the same intellect which will hold three-score children at study in school manage the same number who depend on her for employment? The work is not more complicated than housekeeping, with often the added task of helping to earn the living.

In raising berries, the land must be properly prepared for the crop. Plants properly set at the right time and cared for through the growing season. The crop must be gathered and marketed and the plantation put into shape for winter. Surely no great genius is required to master the business either by man or woman.

The Outlay Necessary for Planting. I will give some figures as they were given me by a woman who has gone quite extensively into berry growing. Six thousand plants to an acre cost on an average, $3.50 per thousand, or $21, and cultivating the same until berries are ripe the following year cost $60. The average price of land being $150 an acre, the interest would be $9. The poorest yield which could be called a crop, was 135 bushels, or 4,320 boxes, while the average crop is at least 200 bushels, or 6,400 boxes. The boxes cost one cent each; commission will average about one cent a box; the delivery and picking will make a total cost of four cents to market a box of berries.

The Returns. Now, if the average price is seven cents, the profit is three cents a box, and on 6,400 boxes $192, deducting the $90 it cost to raise them, the net gain is $102 from one acre.

We know of cases where these figures have been doubled, but I wish to give every day facts. Every hour of work was paid for at the market price; every day's work with a team, $2.50, and every day's cultivating with single horse, $2.00. Raspberries and Blackberries, I think, are fully as profitable, the expense being about the same. I think this, more profitable than teaching, sewing or clerking.

Healthfulness. It is attended with more wear and tear on clothing than the other work, but it is not attended with so much wear and tear upon the health. A woman, even in feeble health can stand one third more work in the open air than in the kitchen. Out-door labor will never hurt a woman if she uses judgment.

Independence. If a woman wishes to run a small berry plantation without much help, she can set the plants, keep them free from weeds and make her own crates and boxes, pick the berries and prepare them for the market, as well as a man. I know this to be true from experience, and it is my candid opinion that any woman possessed of common sense and a reasonable amount of energy may become a successful berry-grower.

Points on Lettuce Culture under Glass.

[*Discussion at the meeting of the Boston Gardners' Association.*]

After listening to a short essay by Mr. Philbrick of Newton Centre, the discussion was continued by several of the principal gardeners of the vicinity of Boston.

Mr. Allen considered "mildew" one of the prinelpal difficulties to be encountered, which could be prevented in a measure by the sprinkling of sulphur upon steam pipes, if culture was in the green-house. In hot-bed culture it could be prevented by good strong bottom heat. The best fertilizer is well-rotted stable manure. Did not consider wood ashes of much account.

Mr. Leonard considered Bowker's Hill and Drill as the best fertilizer, wood ashes is good.

Mr. Frost mixed his sulphur with water before applying to steam pipes to good effect. Lice in seed bed were caused by running the bed too hot. Could not remove lice from hot-bed when the plants were partially headed without pulling the plants up and throwing away and smoking the bed. He recommends changing the soil of the hot-bed yearly.

Mr. Sullivan owing to the heavier soil, he had obtained better success by raising his bed somewhat. He summer fallows his soil and carts into his beds for winter lettuce, changing it yearly, as a preventative for mildew. The burning or rotting of Lettuce heads is caused by watering with too cold water, he recommends passing water through a portable heater.

Mr. Philbrick recommended changing of the soil as a preventive of mildew; he has been led to this behef by experience this past year of changing the soil, and has not been troubled with mildew. He was not troubled fifteen years ago: he thought the soil had become worn out. In watering would give good drenching and not too frequent.

Mr. Kirby would not recommend running glass too early in season, and that Black seeded Tennisball gave better heads than White seed at that season of the year, for he could remove the glass from the beds in the day-time, putting it back at night, for be it known that Black seed grown on bottom heat, unless the glass can be removed in the day-light, forms no heads. With White seed the beds can be run closer. Snlphate of ammonia as a fertilizer had the bad affect of running up too rank growth, the sun burns the edge of the leaves. In watering use caution not to have it to cold, he spoke of the destruction of a bed by not having water at a high enough temperature. The effect of cold water was the rusting of outer leaves.

Mr. Wellington thought that Lettuce grown at the season mentioned by Mr. Kirby more profitable, but uses White seed, a strain or improvement of the old White seed, he obtained it from Portland a few years ago. When watering was necessary wonld shade crop directly after, with use of straw mat.

Mr. Derby thought damp, cloudy weather caused both burning and mildew, he changed his soil yearly and finds it a preventative of both.

Mr. Hill for twenty years has needed no dressing, it depended upon what was left in the soil from the last hot-bed. He would call attention to the Lettuce grown in the green-houses of Mr. Coolidge of Watertown, as being the best, taking one year with another, that he knew of. Mr. Coolidge changes his soil yearly.

Mr. Rawson can not raise as good Lettuce as he could twenty years ago, the longer he grew it, the less he found he knew about it. Damp, cloudy weather and not the sun caused both burning and mildew.

Mr. Tapley was not so sure that new soil was a preventative for mildew; was not successful last year by so doing.

Culture of Standard Pears.

[*J. J. Thomas, before the Western New York Horticultural Society.*]

My orchards consist of over three hundred trees, occupying the ground somewhat irregularly, being mostly the remains of a nursery some twenty years ago. A part stands in the grass, cut annually for hay, and another portion in cultivated ground in which crops of Potatoes, Corn, Parsnips, Turnips, Corn fodder, and Sorghum are continually raised, with an occasional crop of Rye for plowing in as manure. A third portion has been in grass or Clover a part of the time, and at other times cultivated with Corn and Corn fodder, after plowing in a crop of Clover.

Grass vs. Culture. The difference between growing in permanent grass, and in ground yearly cultivated, afforded rather interesting results. Several years ago, when the blight, as an epidemic, swept through the country, it destroyed more than one-half the trees that were not in the grass—the trees in both portions being the Lawrence. Notwithstanding, this result appears to be adverse to cultivation, I have found cultivation to be the most profitable, and recommend it. The cultivated trees make the finest growth, and on those which bore heavy crops last season, I now find the annual shoots from six inches to a foot in length, the trees exhibiting a vigorous and healthy appearance. Those growing in grass are stunted with annual shoots, not over an inch or two long. Both sorts bore heavily, but the Pears on cultivated trees were large, fair, and so free from defects, that in carefully sorting for market, not one bushel in twenty was thrown out, and nearly all were classed with the "best," while of those from the trees in sod, a much larger portion was rejected, and those which remain were one-half of the second quality as to size and appearance.

I found, therefore, that more money is made from an orchard well-tilled, even if one-half is destroyed by blight once in ten or twelve years, than from a greater number of stunted trees bearing low-priced fruit of second quality. I shall plow up the remainder of the sod at proper depth, and run the risk of losing the trees by some epidemic attack. Through nearly all the years, both alike escape. Both have been manured, one as a top-dressing on the grass, and the other with the usual application for cultivated crops. The portion in grass would doubtless do better if the grass could be well grazed by sheep, but this part is so situated that animals cannot be introduced.

A third portion of the orchard was cultivated in hoed crops a part of the time, and at other times was occupied with Clover, to be plowed in the second year. The trees here did well.

Yield. The whole orchard yielded over six hundred bushels the past season, nearly all of which were sent to commission men in New York and Philadelphia, and were sold at fair prices—mostly yielding a dollar a bushel on the tree, after deducting the expenses of gathering, assorting, packing, shipping, freight, commission, and cost of the half barrels in which packed.

Varieties. The following varieties were mostly raised: Bartlett, Lawrence, Howell, Anjou, Seckel, and Chairgeau. The heaviest crops were borne by the Anjou trees. Flemish Beauty and Virgalieu, which for many years past were spoiled by scab and cracking, were fair the past season and sold at good prices. Both would doubtless prove an excellent market Pear, but being so excellent in quality, the few bushels which were raised were naturally reserved for home use, by those who, of course, had the privilege of the "first pick." There were about three hundred bushels of Lawrence, which, having proved an excellent late autumn and early winter variety, were freely disposed of at that season of the year. The sorts which sold at highest prices were Bartlett, Seckel and Clairgeau; the Bartlett for its general popularity; the Seckel for its surpassing beauty of appearance. It may be well to state that the reason why the fruit was so fair, was the spraying with Paris green given to the whole orchard when the fruit was as large as Marrowfat Peas.

President Watrous before the Society of American Nurserymen.

The opening statement was that the meeting was held under circumstances of great encouragement.

In the matter of transportation alone, the association has accomplished more during the past year than in any three preceeding years in its history; nursery products now being transported, as third-class matter instead of first. In the matter of securing reduced postage on cuttings, roots, seed, and bulbs, though not completed, the year's work shows great promise. The work of the year has more than repaid all the association ever cost its members.

In spite of the drought in Mississippi Valley and other drawbacks, the year has not been an unfavorable one to the nursery trade. The results of losses in this and previous years, show that indigenous fruits and their derived varieties are what are wanted. In sections where fruit descended from foreign ancestors such have been severely crippled, while native derived varieties have been but little hurt.

No fruit is more open to improvement than the Apple, and there is reason to believe that in the course of the present generation, the universally propagated varieties throughout the Northwest will be descendents of the native Crab. There has been exhibited two different varieties bearing unmistakable proof of legitimate descent from native thickets, which has excited favorable attention. The Cherry is also amenable to the same laws, and the best authorities agree, that American trees are best for America, whether fruit, shade or ornamental.

President Watrous acknowledged that a great work before the association is how to discover to place products in the hand of the planter under their correct names, and without fraud. While tree peddlers might never be taught not to exaggerate the quality of their trees, the dishonest ways of filling orders with trees different in nature and name from those ordered, should be vigorously discouraged. If nurserymen refuse to sell trees to agents suspected of being dishonest, the evil might be abated.

The experimental stations established by the Government were also highly commended.

Propagation of Ornamental Shrubs and Trees.

[*Geo. W. Stuetz. Read at Iowa State Horticultural Society's Annual Meeting.*]

This paper is part of a thesis written on the Propagation of Ligneous Plants. Being an amateur propagator, I have taken the opinion of the best authorities.

ALNUS, The Alders.—Some varieties are ornamental, *Alnus incana laciniata*. Propagated th same as the Birches, which see under Betula.

AMORPHA, False Indigo. A hardy native shrub. Propagated from seed mixed with sand and allowed to freeze in winter.

BARBERIS, Barberry.—Some species are quite ornamental. Grown from seed, stolons, or cuttings of the new wood. The berry should be washed off, the seed mixed with sand and allowed to freeze, but not absorb too much moisture. Plant, sand and all, in nursery. Cut the stolons in short pieces, keep in sand and plant in spring, like Corn.

BETULA, The Birches.—Grown from seed kept dry until spring, then sowed in drills and covered very lightly. When the plants get above ground they should be shaded, and dry sand spread around them to prevent damping off. Also grown from cuttings. Make the cuttings in the fall, and set in a box with about an inch of moss in the bottom, and on this two inches of sand. Bore holes in the box for drainage. Stick the cuttings in the sand, and water them every three or four days. Keep where they will not freeze, but do not keep too warm, or allow too much light. Plant out in June or July where they will be slightly shaded. They may also be budded or grafted on the common varieties.

CARAGANA.—A number of small trees. Quite ornamental. Keep the seed dry until time for planting, then soak a little in scalding water.

CATALPA.—A fine ornamental and timber tree. Propagated from seed gathered about the 1st of October, and kept dry during the winter. Soak for about two hours, and mix with sand before sowing. Take up the plants in the fall and heel them in, or pack away in the cellar.

CELASTRUS.—*Celastris scandens*, Climbing Bittersweet. A very desirable climber. Grown from seed mixed with sand, and allowed to freeze.

CHIONANTHUS, White Fringe.—Easily propagated from seed. Can be budded on Green Ash.

CLADASTRUS.—*Cladastrus tinctoria*, Yellow Wood.—A small ornamental tree. Propagated the same as Caragana, except that it will not stand as much scalding.

CORNUS, Dogwood.—Propagated from cuttings of the new wood, put out in the fall.

COTONEASTER.—Propagated same as the Apple, and may be inter-grafted with it.

CYTISUS. — Flowering shrubs. Grown from seed, or may be grown from stolons.

DEUTZIA.—A very beautiful shrub, but must be covered during the winter. Propagated the same as the Philadelphus.

Diervilla, Bush Honeysuckle.—Grown from cuttings of the new wood, with a little of the old wood at the base.

Eleagnus.—Some of the species in this genus are very ornamental. Grown from seed soaked for about twelve hours, mixed with sand, and allowed to freeze. Also grown from cuttings put out in the fall, same as Currant, and mulched; or cuttings can be kept in sand and put in the propagating pit in the Spring.

Euonymus, Strawberry Tree. — Propagated from seed kept dry until spring then soak and sow.

Forsythia.—Propagated by seed or cuttings.

Hydrangea.—Very ornamental shrubs. Propagated from cuttings of the new wood. Put under glass in the fall, and potted during winter.

Hypericum, St. John's Wort. *Hypericum Kalmianum.* — A dwarf shrub. Propagated from cuttings with bottom heat.

Ligustrum, Privet.—Grown from seed treated same as the Cherry or graft on the Ash or Lilac.

Lonicera, Honeysuckle.—Beautiful flowering shrubs. The climbers are propagated by layering; tree forms from cuttings.

Mahonia.—Imported dwarf shrubs. Propagated same as Barberry.

Morus, Mulberry. *Morus Tartarica.* — Cut-leaved Mulberry. May be propagated from calloused cuttings, or budded on common forms.

Panax. *Panax sessiflorium.* — A flowering shrub. Propagated from root cuttings.

Philadelphus, Syringa; Mock Orange.— Propagated from cuttings put out in the fall.

Potentilla, Five Finger. — Small flowering shrubs. Propagated by division of roots or stolons. Difficult to propagate by cuttings.

Rhamnus.—Grown from seed kept in sand or dry over winter. Ornamental forms may be budded on the common seedlings.

Rhus, Sumach.—Some of the imported species are very ornamental. Grown from suckers, or cuttings put out in the fall.

Ribes, Currant.—All of them are propagated from cuttings of the new wood put out late in the fall. If desired to grow in the tree form, rub off the buds at the base of the cuttings so they will not throw up suckers.

Rosa, The Rose. *Rosa rugosa.*—One of our most beautiful hardy Roses. Most frequently propagated from cuttings put to root any time from September to January, or by budding in spring and summer.

Rubus, Bramble or Raspberry.—*Rubus odoratus.* — Flowering Raspberry. Hardy shrub. Propagated from root-cuttings or suckers.

Sambucus, Elder.—Besides our common Elderberry there are several cut-leaved ornamental varieties. Grown from cuttings put out in the fall; also from seed.

Spiræa.—This genus contains a number of beautiful flowering shrubs.—*Spiræa fraxinifolia*, and all those that sprout, may be propagated from root-cuttings or sprouts.—*Spiræa salicifolia*, and all of this habit of growth, are propagated from stolons.—*Spiræa opulifolia*, and all those that do not sucker or throw out sprouts, are propagated by cuttings put out in the fall.

Symphoricarpus, Snowberry.—Small flowering shrubs. Grown from seed mixed with sand and allowed to freeze, or from stolons.

Syringa, Lilac.—Usually grown from stolons, May be grafted on the Ash.

Tamarax. *Tamarax Africana.*—A very beautiful shrub. Propagated from cuttings put out in the fall, or in the greenhouse by bottom heat.

Viburnum, Snowball.—Beautiful flowering shrubs. Propagated by layering, or from seeds.

Wistaria.—A strong climber. Increased from seed and layering.

The Lily. Its Culture and Varieties.

[*By O. W. Aldrich, before the Columbus, Ohio, Horticultural Society.*]

The remarks I shall make upon this subject are based upon an experience of some years in another State, where I had in my grounds nearly every kind I could hear of, being more than forty different varieties as named in the catalogues, though many could hardly be distinquished from others of the same class.

Varieties. I will first call your attention to the varieties, as there will be a difference of the culture required in the different classes.

Probably the most common in this locality is the old-fashioned White Lily *Lilium candidum*, which bears its flowers upon a stalk about two and a half feet high. They are pure white, somewhat like a bell in shape, most beautiful and perfectly hardy. A double variety of this is not as beautiful as the single.

Another variety very common in Illinois, is the old fashioned Tiger Lily or *Lilium tigrinum*. This grows from four to six feet high, has salmon colored flowers with black dots on the the petals. It is perfectly hardy of easy culture, and worthy of a place in the garden. There is a larger growing variety which grows six or seven feet high with a much larger number of blossoms than the common variety, which I never saw except on my own grounds. There is also a double flowering variety and another one quite like it called *Fortunii*. This is very similar in flower, but more slender, and has no black bulblets on the stalk as has the Tiger Lily. This one is from Japan, the Tiger Lily from China.

Another class of Lilies is the tubular flowered white Lily, called long flowered or *longiflorum*. One of the larger flowered varieties is called *eximium* and there are two varieties of recent introduction, *Harissii* and *floribunda* which produce a larger number of flowers than the common varieties. None of this class can be called perfectly hardy though I have succeeded in flowering the common varieties out-of-doors several times, but as they start very early it is difficult to protect them without imparing the young growth before the weather is warm enough to uncover them safely. They are very desirable as pot plants, to blossom in March in the house.

Another class the flowers of which are born on upright stems and whose flowers resemble a large single Tulip in shape is called the *umbellatum* or *Thunbergianum*. These are of two classes, one growing about two feet high with reddish flowers spotted with black, which are perfectly hardy. One of this class called *venustum* is worthy of a place in any collection. The other class is of dwarf habit, growing but ten to fifteen inches in height, and are quite difficult to raise. One of them called *citrinum* is a very beautiful buff Lily, but this requires a good deal of care and one will lose many bulbs, even if given.

Another variety called *Martagon* has small flowers of purple, scarlet or white color, but while they are pretty would not be worth raising unless one was making a large collection.

One of the most desirable of the Lilies of large growth is the *excelsum*, which grows from four to six feet high and produces ten or twelve Lilies of fair size and of a beautiful buff. The petals are more recurved than the common white Lily, but not so much so as the Japan Lilies hereafter spoken of. The bulbs are large and the plant hardy and healthy.

There are a number of beautiful Lilies which are quite difficult to grow, among which are two scarlet ones, one of which is called *tenuifolium* which blossoms about the earliest of any variety; but I have not succeeded in keeping the bulbs but a year or two, and the other is called *Chalcedonicum*, and the California Lilies, the white *Washingtonianum* and yellow *Humboldtii* are very difficult to grow here and this is true of the small varieties.

The *Canadense* is a perfect gem, producing generally two beautiful drooping flowers of a red color with white or yellow spots, but it is hard to make the bulbs grow after transplanting.

I will mention the *superbum*, a rather tall growing yellow native Lily, and the *pomponium* so called because when the flower stalks comes up it resembles a pompon or tuft, the crown of leaves at the top looking like a round paint brush an inch and a half in diameter.

There remains but the Japan Lilies, of the *lancifolium* or *speciosum* varieties. They bloom later than other varieties, usually in August. The stalks are from thirty to forty inches high; the flowers are from four to five inches in diameter, with recurved petals, and on either a face of white or white dotted and splashed with pink and crimson. Here let me say when you have got the *rubrum* or *roseum*, which will cost you twenty-five cents per bulb, do not pay high prices for other varieties; for the probabilities will be that when you get them you cannot tell them from the common kinds.

There is, however, a difference between the white varieties. The commonest, called *album*, is one of the more slender growth and is more difficult to keep than *roseum* or *rubrum*; but there is a variety called *præcox*, which is vigorous and hardy as the pink varieties. It is a solid color but has a slight pink flush in the center of each petal and is well worth the higher price charged for the bulb. Another variety called *monstrosum* is very distinct in habit. The stalk is flat frequently an inch and a half wide, and I have had single stalks with over forty full blown white lilies open at one time. The individual flowers are not quite as long as the other varieties being of the same shape and about three inches across, but as the common varieties rarely have more than six or eight flowers, the flat-stemmed ones are much more showy. The queen of Lilies is however the Golden-banded Lily of Japan, *auratum*, with flowers which are, when fully expanded, as large as a dinner plate, the petals pure white with a strip of gold running lengthwise in the center of each and the center spotted with brown or crimsen dots, each plant varying in the color of the stripes, and in some the stripe is a crimson. The flowers exhale the most delightful perfume. A strong plant will prodnce five or six flowers on one stalk, and they blossom in July. They are beautiful pot plants, but are considered difficult to keep out-of-deors, seldom blossoming more than one year and then dwindle away; but by following the plan hereafter spoken of, I have kept them several years.

It will not do to overlook the Japanese *Leichtini*, which is of comparatively recent introduction, as it is a desirable flower. The bulb is small, the stem slender, and grows about two feet high. The flower is yellow with a slightly greenish tinge and is really beautiful. It has proven perfectly hardy with me.

The *Brownii* a beautiful tubular flower of large size, white on the inside and with a shade of purple on the outside is still rare and high priced as it is difficult to propagate.

Culture. Most of the Lilies increase by division of the bulb, and those of the *longifolium*, *speciosum*, *tigrinum* and *umbellatum* species from small bulblets along the stem under ground which in two or three years make flowering bulbs. When it is desired to propagate largely the bulb may be divided into single scales and then planted in pure sand, and if kept at the proper temperature and moisture a small bulb will form on the inside of the base of each scale.

The *longiflorum* and the *auratum* varieties are suitable for pot culture, and may remain in the pots for several years if care is taken to ripen. For out-door culture the beds should be well drained, as but few varieties will thrive when water can stand around the roots.

The beds should be trenched about eighteen inches deep, and in this locality about one-third of the soil be replaced by sand and about a quarter with leaf mold, chip manure or some vegetable manure of this kind, but do not put any barnyard manure about the bulbs.

In setting the bulbs, place a spadeful of sand under the bulb, and cover the small sized ones with three or four inches of soil; but I have obtained the best results with the large sized bulbs, especially of the Chinese and Japanese varieties, by setting a foot or more in depth, having in this way kept the *auratum* for several years. But in setting at this depth the soil must be kept porous by the use of leaf mold or other manure and sand..

Most of the Lilies may be set at any time in the fall between the time of foliage ripens and the ground freezes, but the bulbs will do better if planted in a short time after digging. The *candidum*, however, makes a new growth of leaves in the fall and therefore should be planted earlier, usually as early as August or the bulb will be weakened and delayed a year or two in blooming.

While most of the Lilies are hardy they will do better with some protection in winter.

In growing the *auratum* I generally place some well rotted manure on the bed before the fall rains set in, and when the ground froze I covered the beds with twelve or fifteen inches of leaves packed down so as to shed the rain, and hold them down with some litter, not to keep the ground from frezing, but to keep the water from standing around the bulb. Upon uncovering the bulbs in the spring they should be cultivated, and I believe that it is an advantage to set out some bedding plants which do not grow too tall, between the Lily stalks so as to partially shade the ground.

The bulbs should not be disturbed, oftener than once in three or four years.

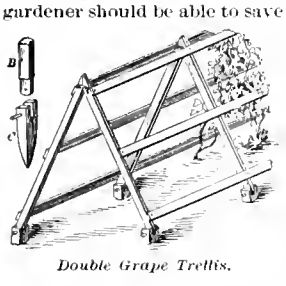
CONDENSED GLEANINGS.

Grapes as Food. It is now conceded by scientists and well-informed men, in all professions, that, as food for human beings, there is nothing in the vegetable world, superior to good varieties of ripe Grapes; and they not only give

strength, endurance and vivacity to those who regard themselves as well, but restore the sick and debilitated to health, when eaten freely during the vintage times of the year, in the vineyards, or fresh from the city markets. As a practical illustration of their health-inspiring qualities is the case of Mrs. Phoebe Swarthout, who resides with her son-in-law, J. F. Crosby, an extensive Grape-grower on Lake Keuka, N. Y. Mrs. Swarthout was ninety-four years old in January last, and now is in good health and strength, although she sustained a fracture of the arm three years ago and again a year later, by being thrown from a carriage, but the broken arm is as sound as ever. Mrs. Swarthout has been a Grape-eater for years, and is firm in her belief that she could not live without them. She begins with the earliest Grapes in August, and has eaten an average of two pounds a day during the season. It is also a well established fact in Grape regions that the large number of girls who work among Grapes continuously through the season of picking and shipping, which is from September to December, or later, gain in flesh from five to twenty pounds, and many who come from the cities in delicate health, return to their homes well and strong.—The Vineyardist.

Double Grape Trellis. I claim for this trellis two distinct advantages: convenience, where (as in my latitude), Grapes are seriously injured by hard freezing in winter, and again saving of timber and expense. Every Grape-grower knows how quickly an ordinary post set in the ground and kept moist by the dense foliage of a Grape-vine hiding the sun's rays, will rot off near the surface of the ground, and need to be replaced. In my plan, the pin or bolt can be withdrawn, the old portion planted in the ground taken out and another put in its place. For general field culture, by those who think eight feet between the rows a waste of land (I do not), they can be planted closer, and the trellises laid down single fashion. And again, where Grapes do not rot, it would not be necessary to train the vines so high, but with me, eight feet is none too high. It is constructed by taking three pieces of 2 x 4 inch scantling, eight feet long, setting them on edge, and girding them with 4-inch boards at the top, in the middle, and also at the bottom. The pieces for uprights should be mitered at the top, while the lower ends should have rounded tenons, to be inserted in mortices cut in the short posts planted in the ground (see illustration), where two frames are shown in position, and joined at the top, like rafters of a roof. They are secured at the upper part by a common latch. This is a combined trellis, affording a support for two rows of grapes.—Prairie Farmer.

Home-saved Seeds. The saving of seeds at home is another vexed question in the garden, and I dare say it will continue so for all time as there are many who for want of the practical knowledge on the subject have an idea that the gardener should be able to save a greater part of the seeds he requires. He might do so, but in a good many cases it would end in disappointment to all concerned. In the first place seed saving is attended with greater difficulty than many suppose, as the different crops require to be so isolated that the different sorts do not become mixed, and it is practically impossible for the ordinary gardener to keep all of the crops pure. These remarks apply to the Brassica family chiefly, and they are the most expensive seeds to purchase. I can fancy the disappointment of the owner of a garden going round some morning and finding as a result of the seeds being grown at home that two-thirds of his crops of Cauliflower or Broccolii are useless, or consisting of what gardeners call "rogues," which are useless for the table. Then again any crop that has to remain upon the ground until the seeds are matured exhausts the soil considerably more than one removed earlier. In addition there is the loss of time in waiting for the crop to ripen, which very often means the loss of a crop. When we look at the low price at which the seedsmen can furnish good seed, there is not much to be gained, even if it were convenient to make the attempt to save seeds at home.—Gard. Chron.



Double Grape Trellis.

Ailanthus and Rosebugs. H. B. Luckenbach, Northampton County, Pa., writes us that Roses and the flowers of the Grape were formerly destroyed by the Rose bug, but since the introduction of the Ailanthus the bugs have entirely disappeared. Mr. L. also adds that he was informed by a friend now deceased, but whose veracity no one would doubt, that he has seen in his native village in the same county, where there were several Ailanthus trees in the public square, that the ground under the trees was covered with dead Rose bugs. The Rose bug is generally regarded as the most difficult to deal with of all the insects of cultivation, and it would be most welcome news if the Ailanthus could be relied upon to rid us of it. Observations are wanted to ascertain if this property is due to the unpleasant exhalation given off by the tree when in bloom, or if the offensive odor of the leaves when bruised may serve us an insecticide. The statement is of great importance, and while we do not doubt that the Rose bugs were destroyed, we trust that all who are so situated that they can make observations and experiments as to whether the insects were killed, by the trees, and the conditions under which they may be made to repeat their useful work, will do so and report.—American Agriculturist.

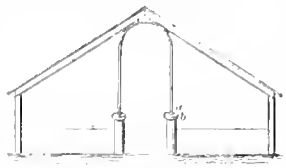
Pear Blight Beetle. Mr. B. W. Hartwell, Linden, N. Y., complains of minute black beetle, that tunnels through and through his Pear trees, doing much damage. It is Xyleborus pyri (Tomicus pyri). The insect is brown or black in color, with red antennæ and legs. The thorax (part next to the head) is almost globular. The wing covers are densely punctured; the body is very abruptly cut off behind. The beetles lay their eggs just at the base of the buds, and the newly-hatched grub eats its way into the twigs and branches, greatly to the injury of the trees. The beetles can be seen merging from the burrows in June and July.

It was formerly supposed that this insect attacked only diseased trees; but this is surely a mistake. It is mostly confined to the Pear, but has been known to tunnel the Apple and Plum. Its presence is shown by its blighting effects; the attacked twigs wilt and die. The best known treatment is to cut and burn the affected branches as soon as they show the disease. As the same treatment is recommended for the fatal Pear blight, it may well be urged that all blighted branches of Pear trees be promptly cut and burned as the blight appears.—Professor Cook, in Tribune.

Fruits and Fevers. As a rule fruit and vegetables form the most appropriate summer diet. In climates where beef-eaters perish by scores, vegetarians manage to survive to a hoary old age, as in Para, Brazil, where the fever hospitals are filled with carnivorous foreigners, while the frugal natives enjoy all the health compatible with their passion for Tobacco. In the East, the pandemic plagues that depopulate whole districts rarely originate among the frugal Hindoos, but start among the foreign residents or the omnivorous Chinese. In our Southern States, however, the natives believe that a vegetarian diet aggravates the danger of contagious fevers, and that idea can be explained only by their experience with stale fruits and vegetables. Fresh fruit, on the other hand, rather counteracts any feverish tendency; but as an additional precaution, it can do no harm to cook (or parboil) all vegetable substances a few minutes before meals. Heat destroys the vitality of the morbific germs, and may in some improve the digestible qualities of green fruit.—Phila. Weekly Press.

The Rind of Fruit Indigestible. That the rind or "skin" of all fruit is more or less indigestible is a fact that should not be forgotten. We say *all* fruit, and the statement must be understood to include the pellicle of kernels and nuts of all kinds. The edible part of fruit is peculiarly delicate, and liable to rapid decomposition if exposed to the atmosphere. It is, therefore, a wise provision of Nature to place a strong and impervious coating over it, as a protection against accident, and to prevent insect enemies from destroying the seed within. The skin of Plums is wonderfully strong compared with its thickness, and resists the action of water and many solvents in a remarkable manner. If not thoroughly masticated before taken into the stomach this skin is rarely, if ever, dissolved by the gastric juice. In some cases pieces of it adhere to the coats of the stomach as wet paper clings to bodies, causing more or less disturbance or inconvenience. Raisins and dried Currants are particularly troublesome in this way, and, if not chopped up before cooking, should be thoroughly chewed before swallowing. If a dried Currant passes into the stomach whole, it is never digested at all.—Popular Science News.

Praise of White Pine. White Pine, when cut back annually after it has reached a height of six or eight feet, becomes compactly covered with fine, thick, soft, hair-like foliage, and soon submits to remain dwarfed. This is an added merit in this beautiful and invaluable American tree. It is reported to endure the dry and trying climate of at least a large portion of the States west of the upper Mississippi. But it seems also likely to be found the most beautiful and effective plant for shelter hedges against the winds, that prevail West. Cattle will not browse it, but they sometimes injure the plants by rubbing their heads in them in spring-time. This can be prevented by a stretch of barbed wire at about 30 inches from the ground, or by two strands at 24 and 36 inches. Robert Douglas, our best authority on growing young timber trees, recommends the White Pine as equal to the Hemlock or Spruce for hedges.—New York Tribune.


Greenhouse Roof Strengthened.

Strength for a Greenhouse Roof. One of the lessons of the late blizzard was the necessity of thoroughly bracing greenhouse roofs. The device shown in the Figure is a form of bracing which materially strengthens the house and lessens the liability of spreading, while it in no wise interferes with the architectural appearance of the house. It consists of pieces of gas pipe or solid iron rods, bent in the the form of a bow or arch and placed say 20 feet apart down the center of the house. The bottoms of the rods are inserted into the tops of the posts supporting the bed. A thread is cut on the bottom of the pipe or rod and a nut, *a*, put on, the nut resting upon a washer, *b*, which covers the whole top of the post. As a matter of course, its length and form can be modified according to best suit the size and form of the house. The device is not patented.—Rural New Yorker.

Good Fruit for Evaporation. From the glut of unsalable evaporated fruit, which prevailed so long last year and into this season, fruit growers may learn a valuable lesson. It is only to use the best, or at least good fruit, for evaporating purposes. It is often said that poor, wormy, or otherwise inferior fruit may be used for drying with no chance of detection. But it does make a difference in quality of the product, as any one may know by a moment's reflection. If the consumer cannot detect poor dried fruit by appearance he is apt to reject it altogether, thus permanently injuring the fruit growing business. In the great amount of fruit now thrown upon the market, it would be a misfortune equally for producer and consumer to have its evaporated product generally discredited.—American Cultivator.

Apple Tree Roots. In plowing among the trees a great difference is noticeable between those thoroughly cultivated, and those neglected a few years, as to the position of their roots. The orchard plowed every year has most of its feeding roots just below reach of the plow. That left in grass, runs its feeding roots nearer the surface, and the plow necessarily destroys a great many. This does not injure them much while the tree is dormant. As soon as the leaves appear the destruction of the roots, by plowing, or anything else, is a great check to the growth of the tree.—Cultivator.

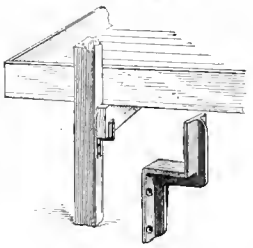
The English Apple Market. An unusual quantity of dishonest packing appears to have been practiced by apple-growers and shippers during the past winter, and as usual it has brought its own punishment. Bad fruit, faced with two or three layers of handsome specimens, was sent to England, but the fraud was discovered, and the shippers lost heavily.—Canadian Horticulturist.

The Waste Places. There is no use having a single foot of unprofitable land. We are trying Pear trees along our ravines, fruit trees along permanent fence rows, and forest trees on the rocky points that border the brook that runs diagonally across one corner of the farm.—National Stockman.

Growing Turnips. There is no crop so easily grown as Turnips, and in occasional years they have brought me more net profit than almost any crop I ever grew in the garden. The demand for them is limited, however, and the man who grows them should watch the market closely and be ready to sell at a day's notice. The conditions for success in growing Turnips are moderately rich soil, free from weeds, well compact, and fine at the surface. I never succeeded in growing a profitable crop on freshly plowed land. The land for this crop should be plowed in June, and rolled and harrowed in order to get it smooth and solid. I have grown good crops after cutting a crop of good Clover hay by plowing at once, and rolling and harrowing frequently, and also after wheat by burning off the stubble, and simply harrowing the land thoroughly. The sowing should always be done as soon after a rain as the land will work. Before sowing the seed, pass over the field with a plank-drag of sufficient weight so that it will fill all the holes and leave the surface fresh and smooth; then sow the seed and drag again with a lighter drag to cover it.—*Ohio Farmer.*

Bugging as a Business. A paid insect detective might do great service in a neighborhood by keeping down Apple and Peach borers, curculios, Currant worms, Rose bugs and slugs, etc. Knowing when and how to meet them, he could, with a little aid from the families he makes engagements with, do much to preserve the beauty and the produce of the plants surrounding our dwellings. In Europe there are professional mole catchers, rat catchers, and vermin destroyers, and they stand well in the community as doing special service, and having qualifications and knowledge not generally possessed. Professional insect controllers would even be more worthy of support and regard, not only for their service in preventing the destruction of valuable crops and plants, but as a means of acquainting the youth of the country with some of the leading facts of practical entomology, and as watchmen prompt to detect the first appearance of any new insect enemy, and to suppress in time what, with delay, might prove difficult or impossible to get rid of.—*N. Y. Tribune.*

Iron Bench Support. A bench put together in such a way that it can be readily taken down, changed or replaced possesses advantages easily recognized by any florist, and Mr. R. J. Donovan, of Havelock, Chicago, has benches of that character. The illustration shows a center bench as seen in his house. The 4x4 posts which support the roof do the same for the benches, and are provided with an iron casting — as shown in sketch — which holds the cross-pieces of the bench. The six-inch board at the edge is placed inside of the posts which holds it in position. The iron supports are attached to the posts by heavy screws; outside of these no nails, spikes or screws are used in the bench. There is no patent on this device and the castings can be cheaply made by any foundry after a pattern is once provided.—*American Florist.*



Cast-iron Detachable Bench Supports.

Constructing a Cold Pit. Some years ago I built several very cheap cold pits in the following manner: The walls were built up with rather stiff soil, rammed firmly together, the back wall being 2½ feet high, and the front 1½ feet. When the walls were high enough the inside faces were cut down straight and lined with builder's slates. These were not absolutely necessary, but I wanted to make the place neat. The outsides were rounded off and covered with turf, fastened with pegs at first, but it soon began to grow, and attached itself to the soil. A light wall-plate and rafter were fixed on the walls. Such a pit will be as durable as if built with bricks, and is superior to bricks for keeping out frost. Geraniums might be wintered in such a pit, if kept dry and the glass well covered.—*Gardening Illustrated.*

Empire State Grape. The one vine of that sort planted on our place, which last year made a vigorous growth, ripening its wood well, was found this spring to be killed to the ground through sprouting from the root.—*Orange Co. Farmer.*

Draws the Line at Bone. I have had considerable experience in the use of guano and phosphates, and have come to the conclusion that pure raw bone is the only fertilizer worth buying.—*Elmira Husbandman.*

Cauliflowers. A friend of mine who grows wonderfully good Cauliflowers is of opinion the secret of success may be summed up in three words—viz. "plenty of manure."—*Journal of Horticulture.*

The Best, taking everything into consideration, is the Japan Quince (Cydonia Japonica) our most valuable shrub for ornamental hedges.—*Hoopes, in Tribune.*

Mothers Earth's Bank. Judicious and careful draining is like putting money in a bank, paying twenty-five per cent. to 100 per cent.—*Observer.*

Too many Apples are wasted annually, and too much adulterated vinegar finds its way on to city tables.—*Rural New Yorker.*

Overproduction of inferior fruit is the greatest hindrance to the horticulturist.—*Michigan Farmer.*

Vegetable Products on the Table.

Green Tomato Catsup. Eight pounds Tomatoes, eight ounces green Peppers, four small Onions, all chopped fine; four cups sugar, four tablespoonfuls salt, two quarts of vinegar. Boil until quite thick.

Squash Cakes. Sieve two and a half cups of cooked squash; add a pint of milk, two eggs, a teaspoonful of sugar, a pint of flour, two teaspoonfuls of baking powder, and a little salt. Beat together until smooth and fry brown in butter.—*Patron and Grange.*

Apple Jelly. Use good sour apples, slice them, skins, seeds, and all, and simmer with one-half a cup of water till well-cooked and soft; then strain through a cloth, add a pound of sugar to a pint of juice, boil a few minutes, skimming till clear; pour into glasses and cover when cold.—*Home Companion.*

Fried Egg Plant. Peel the egg plant and slice it, sprinkle each slice plentifully with salt, and put them to stand between two plates in a cool place for an hour or so. Wipe each slice quite dry, sprinkle with powdered sage, dip in beaten eggs and bread crumbs, or in batter, and fry in plenty of hot lard or olive butter.

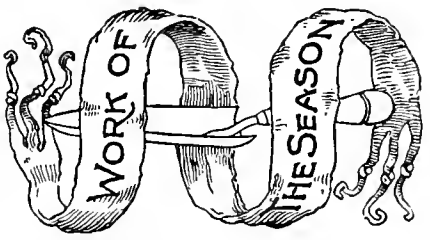
Tutti-Frutti Jelly. Soak one-half box of gelatine in one-half pint of water; add one pint of boiling water, the juice of three Lemons, and one and one-half cupfuls of sugar; then strain. When cold, put a layer of the jelly in a dish, than a layer of Bananas, one of gelatine, and one of Oranges; than another layer of gelatine, a layer of cocoanut, gelatine again.—*Rural Home.*

Tomatoes. One quart of raw Tomatoes, highly seasoned, with three beaten eggs, and baked; bread crumbs can be added and made into coquettes and fried. Several large sized Tomatoes, scalded, mashed to a pulp, highly seasoned, with a tablespoonful of butter, stew until it simmers, then add a teaspoonful of cornstarch dissolved in water, and let it simmer while stirring.—*Detroit Free Press.*

Rhubarb Custard Pie. Stew the pie-plant until soft, when cool add to it the yolks of two eggs well-beaten, the juice and more or less of the grated rind of one Lemon, and enough sugar to sweeten the whole to taste. Line two plates with crust, fill with the mixture and bake. When done beat the whites of two eggs to a froth, add one-half cupful white sugar and a few drops of vanilla, spread upon the tops of the pies, return them to the oven and bake to a light brown.—*Farm Life.*

Peach Preserves. A Southern method of making Peach preserves with but little cooking is, after paring the fruit, to add a pound and a quarter of sugar to each pound of fruit, and cook very fast for a few minutes in a porcelain kettle. Then turn out into a glass bowl, cover with muslin and set in the sun, stirring daily until the preserves become very clear. They are thought to have a better flavor thus than if made on the fire. Cover with brandy-paper and egged-paper.—*Florida Fruit Grower.*

Mushroom Pie. Pare and slice three Onions; pare, wash, and slice six moderate-sized Potatoes; wash and chop a little Parsley. Put the above into a pan with a quart of water, add a quarter of a pound of butter, and boil gently for an hour and a half. While this is boiling, pare one pound of mushrooms, cut them into moderately thin slices (sideways) and put into the pan; add pepper and salt to taste; then let the whole simmer for a quarter of hour; then mix a tablespoonful of flour with milk, and add; stir until the whole boils; then pour into a good-sized pie-dish; cover with paste, and bake in a moderate oven; as soon as the paste is baked the pie is ready. The above may be prepared a day before it is wanted, and made hot when required.—*English Farm and Home.*



HOUSE PLANTS.

Ageratums should be held in check as to flowering if desired for winter blooming.

Anthericum. The variegated one is an excellent house plant. It requires a good deal of root room, but in potting or shifting it may have the soil all washed from the roots and, using some fresh soil, be replaced in smaller pots than without this.

Aspidistras, the beauty of which is in the leaves, are benefited by applications of a liquid or other fertilizer while their leaves are in their best growth.

Balsams now lift easily from the beds to set into large pots for adorning the window after frosts.

Begonias of winter blooming varieties showing buds on leading branches should be well pinched back, to induce stockiness and more bloom later.

Browallias give fair satisfaction as pot plants. The seed should be sown now if not yet in.

Callas. For early flowers start into free growth by giving rich soil and plenty of water at this time.

Chrysanthemums. Soak the earth twice a week from now until October with weak liquid manure. If the black aphis or thrip appear sprinkle the affected parts with Tobacco dust when the plants are wet.

Coleus cuttings for winter may be struck.

Echeverias when grown in pots should be watered moderately and have soil not rich but sandy.

Evergreen plants and shrubs, like Daphne, Olea fragrans, etc., if they need shifting at all before winter, should receive it before this month is out.

Freesias. These delightful bulbs if planted a dozen or more in a large pot or box make choice ornaments for the window garden, and the fragrance is delightful. They may be started earlier than the mixed collection of winter flowering bulbs.

Fuchsias. Old plants of winter-blooming sorts now at rest may be taken from the pots, cut back within three or four inches of the roots, and if troubled with red spider remove every leaf as well; wash off the soil and repot in fresh, rich loam, using water sparingly till new growth is well started.

Petunias. To cut in the straggling branches that come from rapid growth now will lead to nice plants for the window garden by October.

Propagation of such tropical plants as Clerodendron, Ficus, Cissus, Rex Begonias, etc., can be done by the amateur without the aid of a propagating house more successfully now than at any other time. Place the green cuttings in sand and cover with any glass vessel, watering lightly as needed.

Roses suitably prepared for winter blooming are at the present auxious to grow and show their early bloom. They must not be over-potted, a great fault with amateurs. Angle worms often trouble; apply lime water, not to strong.

Tuberoses in bud at the end of the month may be lifted carefully, to flower in the house later on.

Veronica. As this plant's blooming season is near, encourage the setting flower spikes with applications of weak liquid manure.

Vinca. Divide the roots of this vine, potting what is needed for the house. Doing this early, the part remaining in the ground has time to recover and become established for the winter.

LAWN AND FLOWER GARDEN.

Borers are liable to attack Acacias, Mountain Ash and the ornamental flowering fruit trees. They do this in the trunk near the ground, chiefly; if the borings are met dig out with a knife or stiff wire.

Edges next to flower beds and walks should be neatly trimmed once a month at least by cutting with a sharp spade, or better still an edging iron.

Gladiolus. If the spikes from strong bulbs are cut early (such will flower completely out if set in water) usually some new spikes will follow later.

Hollyhocks and similar tall plants should be kept tied up to prevent the risk of their being snapped off by violent summer gales.

Layering of Roses, shrubs, etc., may still go on.

Lifting. As stated last month, we favor the early lifting of most plants that are wanted for fall decoration. Aim to secure all the roots possible, pot firmly, shade closely for a week and sprinkle the tops several times daily for a time.

Plants in tubs or in pots set on the lawn, as well as those in vases, need to be watered often and thoroughly. Do not imagine that because the top of the soil is wet that it is soaked through.

Roots absorb moisture in a vaporized form only, hence the importance to roots of a well drained soil penetrable by the air.

Rock Gardens often suffer in summer from drought, and this should be prevented. Remove the tops of plants that have passed into a ripened state.

Seed sowing of most perennials and bienials is timely now. Provide shade for young plants when up.

Lilies. The White Candidum and a few others that are now at rest, should be transplanted at this time.

Evergreens. Such a high authority as Josiah Hoopes strongly advocates August over spring for transplanting Evergreens. Done at this season new roots soon form, to the advantage of the wintering. The only drawback now is a high temperature, tending to free evaporation, to overcome which transplant on a damp, cloudy day, and afterwards the trees should be sprinkled over head every evening for several weeks.

Trimming up the flower beds at this season clipping the plants of formal beds, removing faded flowers and stalks of border perennials, and throwing out early annuals that are past, will help much for the good appearance of the garden.

Verbenas usually show exhaustion now. Cut back the extremities, giving repeated doses of liquid manure, or else strew some fertilizer over the plants, and they will come around with a fine crop of bloom, and of cuttings for propagation later.

Watering lawns is much practiced wherever there are good systems of water-works. In most cases far more water is applied than is necessary, causing a soaked and unhealthy condition of soil. Mounds and slopes require some extra attention. To freely water trees on lawns is one great secret of having them make a rapid growth. Here there is little danger of watering too much. Water thoroughly while at it, making aperatures with the spading fork over the area of the roots, to readily take in the water

PLANT CULTURE UNDER GLASS.

Bedding Plants of such kinds as are scarce, or of which it may be desirable to get up a large stock next year, may now have the first fall cuttings put in.

Camelliaa. Continue to guard against dryness at the root. When a plant is found badly wanting water plunge the pot in a tub for half an hour. While we urge full necessary watering, still the mistake of overwatering must be prevented.

Carnations to begin bloom about the holidays should now be cut back for the last time.

Chrysanthemums in pots now need some special attention. Pompons to be stopped for the last time; large flowering kinds not to be stopped again. Stake and tie as needed. Plants intended for show should have some of the surface soil removed, to be replaced by some rich half-rotten dung.

Geraniums for winter bloom should be stopped all over now. Propagation may be begun for plants with which to decorate the house early next spring.

Greenhouses will never be nearer empty than now. Let them therefore be put into thorough shape for restocking with plants later. Clear out, cleanse, repair, paint and fix up generally. All wood and brick work should be cleanly scrubbed.

Hard-wooded plants, such as Aucubas, Laurestinus, Laurels, Arbor-vitæas, etc., that have completed their growth for the season in the ground can be lifted now to better advantage than later.

Orchids now require to be gone over with a view to separating plants, that are going to rest from those that are still actively growing. As the growth of any Orchid appears to be completed gradually withhold water and remove to a cooler part. Young plants lately potted to have their growth encouraged.

Pelargoniums should be cut back at once if not yet done, using the ends of shoots for propagation.

Pots. New ones needed to be bought before the season of lifting and propagating, now near, opens; all old ones to be soaked and washed very clean.

Roses for winter flowers to be syringed daily, closing the house after the last syringing. If bedded give the border a liberal manure mulch now. Do not cut back the old wood of Tea Roses, for it will not break strong below the cut. A better way to get rid of old canes is to curve them to the ground, pegging them down, when new and strong shoots will break from near the base of the old canes.

Smilax seed should be sown for next year's plants, and old roots that have been at rest to be started up.

Stocks of the Ten-week and Intermediate tribes for winter bloom may now be sown. Of the former the Wall Flower-leaved ones are favorites with us for this purpose. To provide a succession they should be sown at intervals of six weeks.

FRUIT GARDEN AND ORCHARD.

Budding of most kinds of fruit trees may go on. Cherry, Pear or Plum should be about done with; Apple to come after these, and Peaches and Quinces to follow about the end of the month. The ties to be watched, cutting them before they cut the bark.

Currants. After the leaves have dropped, trim the plants, thinning fully half of the new growth. A well-known grower says the best time to take off cuttings is in August or early in September, that the natural warmth of the soil may operate as bottom heat before chilled by frosts. Shoots of the current year's growth are cut eight inches long, and placed vertically in compacted soil with an inch of the top exposed.

Early fruit should be used promptly when ripe; kept beyond a fair eating state the quality soon falls.

Enemies. *Plant Lice.* Destroy by dipping the affected parts (usually the ends) into a bucket of strong tobacco water prepared from cigar-makers' waste, or else syringe with this. Cut out *Black-knot* from Plums and *Fire-blight* from Pears as soon as they are seen. Large and voracious *Green Worms* often trouble Grape-vines at this season, and should be destroyed. *Borers* deposit their eggs in the lower part of the trunks of Apples, Peaches, etc., during summer. A band of tarred paper around the tree at the base, the lower edge covered with soil, will prevent much mischief. Probe for old timers. The nests of late *Web Worms,* should be destroyed promptly.

Gooseberries See for Currants. They can be easily propagated by "stooling," that is, banking the earth around them and well up into the plants.

Marketing. Many varieties of summer apples will be ripe and ready for shipping during this month and to have them carefully picked, graded, and honestly packed in clean, new crates or barrels, with no better fruit on top than there is in the middle or at the bottom of the crates or barrels as the case may be, will inspire a customer with confidence enough to risk a second trial of the same brand. The inferior fruit of any kind had better be kept at home than to injure prices of the better by mixing indiscriminately and marketing in that fashion. As a rule, fruit marketed in good condition brings good and satisfactory returns.

Mulch any trees that are suffering from drought.

Raspberries. Clear out the old canes after fruiting and treat each plant to a shovel full of rich compost. When the tips of the Black-cap class take on a purplish white color propagate, if this is desirable, by bending these to the earth and covering each tip lightly; a stone may keep it in place. It will soon root. Observe same directions for Blackberries.

Strawberry beds that have fruited should now be kept well tilled. A stimulant should also be applied to the plants; nothing is better than hen manure and ashes mixed with wood's earth. Some of the same spaded into the soil will prove a treat.

Watering fruit trees in dry seasons is of much help to the crop. This done after the development is so far along that seeds and stones begin to harden is especially useful. To water trees draw enough soil from the stem to form a saucer-like edge; into this depression place a mulch over which to run the water. The mulch will extend the benefits a long time. Some liquid manure is also a great help.

THE VEGETABLE GARDEN.

Asparagus beds kept clean of weeds and grass all way prove much more productive for this.

Celery. Set out the late crop. The successive plantings are to be earthed up gradually, as sufficient growth of stem to handle appears. This is best done after a heavy rain or watering. Take care that no soil finds its way into the hearts.

Cucumbers. Gather daily for pickles. By taking them at two inches long (the favorite size) the total number produced will be increased. In picking use the knife, pulling and twisting them injure the vines.

Egg Plants to be encouraged with liquid manure; mulch to keep the fruit clear of the ground.

Liquid Manure now applied once or twice a week to any growing crops of Lettuce, Cabbage, Cauliflower, etc., will help them much.

Onions. Gather when most of the tops have fallen. Pull and dry for several days before storing. Seed may be sown for early spring pulling. Just before winter cover the seedlings lightly.

Potatoes will be dug from day to day; those for seed to be left until the tops are well ripened. If there be any rot, burn the tops instead of leaving them on the ground or collecting for the manure pile, thus preventing the spreading of the germs.

Seed saving is one of the important garden jobs Only the best, and as a rule the earliest stocks, should be used for seed. In gathering seeds let them be well dried and put up carefully, marking the packages with name and date.

Sow early Turnips, Lettuce, Endive, Spinach, early and winter Radishes and bush Beans for pickling. These may occupy the space of early crops taken off.

Spinach. Round seeded sown at once will yield a supply to vary the produce of the season later.

Squashes. Keep the cultivator going until the tops prevent. The same advice applies to Melons.

Sweet Potatoes should now be growing rapidly, the branches to be raised occasionally to prevent their rooting. Keep perfectly clean of weeds.

Tillage. A lively hoe is a good substitute for rain in supplying moisture to growing crops. Continue to work between the rows of all growing crops until the tops interfere.

Tomatoes. Fruit shaded by an excessive growth of leaves, as a result of wet weather can advantageously have some leaves removed to admit the sun to them. Gather and destroy the large Green Worms. If you do not trellise your plants then mulch, to keep the fruit from the ground.

FRUITS AND VEGETABLES UNDER GLASS.

Grapery. Fruit in a ripening state should have a free supply of air. Free ventilation will help both the flavor and the color of the fruit. If the shoots are crowded remove a portion of them with a view to securing a perfect ripening of the wood for next year In cold houses the forming bunches should be thinned of all defective berries.

Mushrooms can easily be raised in old frames or any one under greenhouse stages, or even in a cellar or shed. Collect a good heap of horse manure, shaking out the straw. Spread it out as it accumulates, to prevent heating, and turn at intervals of a week for several weeks. Then add loam—if it be turfy all the better—in the proportion of one third or one fourth of the whole, and make up a bed of 18 inches deep, beating it down well as the work proceeds. Let it remain until a brisk heat arises, when spawn (to be had at seed stores) should be inserted in pieces the size of an egg, about four inches apart. Cover the bed with two inches of fine loam and then wait for results.

Strawberries. See under this head last month. It may be added, that the compost used for pot plants ought to be strong loam and rotted manure, and the plants be potted quite firmly.

THE POULTRY YARD.

Chickens and Turkeys, suggests Farm and Stockman, should not be fed together. The chicks get more, and the turkeys less, than their share.

Scabby Legs. This is the season when the legs of the hens will become scabby. It is due to a minute parasite, which gradually builds a lime substance on the shanks. Any kind of grease will cure it, but the remedy generally used is to add a teaspoonful of kerosene to a gill of melted lard, which is well rubbed on the legs of the fowls once or twice a week, and soon renders the legs clean.—Mirror and Farmer.

Pekin Ducklings at three or four months old make a very desirable dish if they be well fed from the shell, and fattened on cooked ground, Oats and Corn, with Potatoes added. They are also very hardy if not inbred, and stand our cold winter remarkably well. They are early layers and continue with only short intermissions until late in the summer. They thrive rapidly, and when matured will ordinarily weigh from twelve to fourteen pounds per pair.

Roup. Under the guise of roup, are various forms of disease, arising from the same causes. The symptoms are generally; they lose ambition, and in the last stages throw their heads forward and make a shrill cough. Treatment: Remove the fowl from connection with other fowls, as it is very contagious. Wet the top of the head with spirits of camphor and put a little under the wings and between the legs; do not put too much in the latter places, as it may blister. Soak two or three small crackers in hot water or milk, and add Cayenne (red) Pepper the size of a very small Pea, and about one-half teaspoonful of brandy. If the fowl does not eat the preparation, force it down; keep all other feed from the fowl and give this mixture two or three times a day until better, and feed very lightly for a few days. – Country Gentleman.

Fowls and Fruit. Heat is a great trial to fowls; they need some summer screen. The shade of trees and bushes, with a good dust wallow in the shadiest spot, is a great aid and comfort, and the trees are doubly benefitted by the arrangement—first in a free supply of effective manure and suppressing of weeds; and, secondly, by the destruction of many insect enemies. Plum trees do better in a poultry yard than elsewhere, and tall sorts of Raspberries and Blackberries flourish there with little care or outlay. Sometimes, however, it is found necessary to shut the fowls off from these by wire netting or otherwise, just when ripening fruit. We have found no summer shelter so perfectly comfortable to chickens, as an Asparagus bed convenient of access after the cutting season is over and growth shot up. With roomy runs of such a kind, there is little or no danger of disease among the feathered stock.—New York Tribune.

Poultry-house and Poultry. To ascertain the size of house required for any number of fowls, give each bird from 10 inches to 12 inches of perch room, and place the roosts a yard apart. For fifty birds about 52 feet of roosts would be wanted, and these could be easily set up in a pen 15 feet by 7 feet. A perch would be fixed at each side of the building and another may run down the centre. A door may be placed at one end corner; this would slightly reduce the length of one of the outside perches. Larch poles, about 3 inches or 4 inches in diameter, split in two, and nailed the flat side downwards, make the best perches. In building, the cheapest plan would be to buy the materials and engage a carpenter to do the work. If it be possible to divide the runs, the fowls would do better in two lots. It is a difficult matter to advise as to the choice of breeds. The Langshans, the Wyandottes, and the Plymouth Rocks are all useful. –Doulting.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

821. **Mulberry Propagation.** Can this tree be successfully budded? If so, when is the best time?—D. P., *Poplar Grove, Ind.*

822. **Climbers.** Will some one give information regarding the Japanese Climbers Actinidia polygama and the long fruited variety of the same; also, of the Silk Vine, *Periploca Græca*, their appearance, habits, hardiness, desirability, etc.—I. S., *Cincinnati, O.*

823. **Peaches and Grapes Together.** Trees in my Peach orchard are 20 feet apart. How would it do to set a row of Grape-vines midway between the Peach rows, skipping one occasionally to leave driving place for gathering the fruit?—L. D. H., *Northampton, Mass.*

824. **Fertilizer from Blood.** Will you give the formula to make a fertilizer out of blood suitable for fruits?—J. A. T., *Midway, Pa.*

825. **Currants Dropping.** The bushes, which are thrifty, blossomed freely, but later I discovered many imperfect clusters and green fruit on ground. What causes the trouble? Killed the worms with Hellebore.

826. **Smut on Sweet Corn.** For two years mine has been badly troubled. How prevented?—SUBURBAN.

827. **Evergreens in Texas.** When is the best time to transplant Evergreens in this State? Should the White Pine succeed here?—J. J. B., *Graham, Texas.*

828. **Black Currants not Fruiting.** They are the Black Naples, three years old, luxuriant in growth; soil deep prairie loam. What is the trouble? Would it do to prune clean to the ground, and so start a new growth?—G. D. S., *Villisca, Iowa.*

829. **Currants and Gooseberries.** For a market plantation had I better set the young cuttings the coming fall or in the spring? Had they better for the sake of shade go in an orchard 20 years planted, or to an open patch?—F. St. J. F., *Nova Scotia.*

830. **Evergreen Seedlings Failing.** After the seedlings were up (spring sown) they fell over as if one had pinched them. Could see no insects. I had them shaded. Why?—E. R., *Ida Grove, Iowa.*

831. **Plum Rot.** I saved my fruit from curculio, but about June 20 rot set in and took it all. What is the cure for Plum rot?—J. H., *Kent, Ohio.*

832. **Raspberries Stung.** Mine were badly stung last season. At what time was this done? What is the remedy?—R. S. M., *Taylorville, Ill.*

833. **Barberry from Seed.** Will you please give me directions for planting Barberry seed and caring for the same, and oblige?—W. B. R., *Plattsmouth, Neb.*

834. **The Gueii Plum.** Will you describe this Plum? Is it hardy? Is it subject to rot before maturing?

835. **Gooseberries for Market.** What variety is the best? What as to profits?

836. **Early Strawberry.** I want one that is productive and earlier than Wilson. What variety shall I get?—J. S. L., *Bristol, Ind.*

837. **Keeping Locusts from Sprouting.** Is there any way by which this can be done where the trees have been cut down?—W. S. F., *Farmdale, Ky.*

838. **Seed-grown Flowers for Ribbon Lines.** I wish for a list of the best of these, with notes on their arrangement for a nice effect. I propose to sow the seed in a hot-bed next February.—A. L. H., *Iola, Kas.*

839. **Datura Propagation.** Can Datura arborea alba be propagated from cuttings?

840. **Grafting Marechal Neil Roses.** When is the best time for this, and what stocks the best to graft upon?—C. G., *Madison Co., Ala.*

841. **Rhododendron Protection.** Sheltered only by a headless barrel set over it last winter, the old stock of my plant died off, but new shoots have come up. If I leave it out hereafter what must I protect it with to bring it through safely? Or had it best be lifted and wintered in the house?—M. D. P., *Earleille, Ill.*

842. **Chestnuts for Illinois.** Do you think the common Sweet Chestnut would do well here? What would be the cost of some trees?—M.D.P., *Earville, Ill.*

843. **Tree Pæony not Blooming.** The plant has grown very well and forms buds, which drop before opening. What is the cause and cure?—SUBSCRIBER.

844. **Marguerites.** I would be much obliged for information as to the culture of Marguerites or Paris Daisies as grown to large size in the cities. The plants have thick stems, and are very large; the blossoms fine and very abundant.—JUANA.

845. **Fly on Chrysanthemums.** My Chrysanthemums are covered with green-fly. I should be glad to know what I can do to cure them. They are mostly Japanese varieties. A CONSTANT READER.

846. **Plants Bare at Bottom.** I have some Perennial Phloxes, the bottom leaves of which shrivel up and drop, leaving the stems nearest the soil quite bare. The ground was well manured last autumn when they were planted, and had a slight mulching of manure during winter, which was forked in, in the spring.—L. B., *Crawford Co., Pa.*

847. **Plants after Blooming.** What must I do to such plants as Petunias, Abutilons, Tuberoses, and plants of a similar kind; in a cool greenhouse, when they have done blooming. As a novice I never know how to treat my pot flowers after bloom.—A. E. H., *Neenah, Wis.*

848. **Raspberries Dying.** Last fall I ridged up by plowing, and manured my three-year old Gregg plantation, located on a gravelly side hill. Did not work them this spriog, but trimmed them out and nipped the young shoots. About June 1st the leaves began to show signs of dying, and in spots of six or eight inches would turn black. Later a dead shoot would here and there be found and now often the entire plant is dead. In another plat of older plants on level sandy soil, but which had no manure, the plants are in about the same bad condition. What is the fault, the soil, the ridging or the manure? When had I best remove the ridges from the remaining plants to not injure the roots?—J. C. H., *Lawrence Co., Pa.*

849. **Manuring Raspberries.** When is the best time for this, spring or fall?—J. C. H.

850. **Muslin for Hot-beds.** Will muslin prepared as recently directed by Mr. Miller answer for a cover in wintering over Cabbage and Lettuce plants. Does it give light enough so that the plants do not become drawn as if in shade?—E. W. V., *Genesee Co., N. Y.*

851. **Young Ducks Ailing.** When my young Pekins get about three weeks old they grow weak, blind, and fall helplessly on their backs and soon die. I feed on Corn and Oat meal mixed into a dough. What is the cause and remedy?—E. H. P., *Montville, Conn.*

852. **Worm on Alternanthera.** A little worm which makes a web is stripping leaves from Alternantheras here. What must be done?—C. P. M., *Wichita, Kas.*

853. **Smilax.** My vines turn yellow and die down. Will you please to tell me how to grow them?—Mrs. A. C. T., *Broome Co., N. Y.*

854. **Cyclamen Treatment.** I got some Cyclamens this spring. They are nicely in bloom. I want to know, to treat them after they are done blooming, and how to in winter.—T. H., *Ashtabula Co., Ohio.*

855. **Ants in Lawn.** How can I get rid of colonies of ants in my lawn?—J. L. L., *Stamford, Conn.*

856. **Raising Cauliflower Seed.** How is this done? What soil and climate is the best?—E. C. S., *La Plata Co., Colo.*

857. **Grapes.** (*a*) Where can I get paper bags for bagging them? None are advertised in your columns. (*b*) What is good for vines the leaves of which are dry, crumbled and turning brown?

858. **Weeds.** What will keep Purslane from coming up every June so rank?—Rev. E. F., *Herford Co., Md.*

859. **Cherry Sprouts.** To what purpose can the old-fashioned Black Cherry best be used for grafting?

860. **Cherries for Market.** What varieties would be most profitable here due east of St. Louis?

861. **Cucumber Pickles.** How made in barrels to be at all times ready for use?—P. B., *Mt. Carmel, Ill.*

862. **Ailing Camellia.** I enclose a leaf of my Camellia, which is a sample of many others that look sickly and yellowish. I would be glad to know how to restore it.—ISABELL, *Monroe Co., N. Y.*

863. **Strawberry Insect.** It is a bug new to me, not much larger than a chinch bug, and has six legs; gold or bronze color on the back. They eat holes in the leaves and the crown of the plant. They have destroyed an acre of newly set plants for me. What is it and the remedy?—G. W., *Turner, Iowa.*

864. **Unfermented Grape Juice.** Will you kindly inform me of the method of preparing and keeping it properly so that it will remain unchanged for a year or two? I would like to utilize the fruit of quite a number of vines in this way.—F. F. D. Y., *Pekin, Ill.*

865. **Grapes.** (*a*) Will Grape buds in sand or soil outdoors, protected from cold, callous and grow in the spring like ordinary cuttings? (*b*) Should Grape roots be shortened when set out to balance loss of top, and do roots decay if not cut? (*c*) Is ordinary grafting wax injurious to vines? If so, why?—J. L. PECK, *New Jersey.*

866. **Dealbata Acacias.** Over 1000 plants potted seemed all right for a month, then they died down. With the same treatment, Grevillea robusta and the various species Lophanta and Eucalyptus do finely. We have plunged the Dealbatas, and although watered daily, the soil is never soggy. We have patent sash cloth over them.—ROBERT REID, *Orange Co., Fla.*

867. **Asparagus.** What length is market Asparagus cut, the size of a bunch and manner of shipping?—L. C. M., *North Bergen, N. Y.*

868. **Verbenas Rotting.** (*a*) My plants suddenly rot off at the ground and die. The ground is rich. (*b*) What will destroy the worm that forms a web on and eats the plants rapidly? All my remedies have failed.—J. E. B., *Philadelphia, Pa.*

869. **London Purple for Cabbage Worms.** Our druggist recommends London Purple for Cabbage worms. Will others please give their opinion? Being much diluted and getting mostly on the outer leaves, can it be dangerous? Pyrethrum seems hardly to be effective.—D. H. W., *Vineland, N. J.*

870. **Tomatoes not Bearing.** (*a*) Would like to find out the cause of large healthy Tomato plants not bearing any fruit some years. I cut the tops back, but to no purpose. Please give all the information on Tomato culture you can.—J. E. W.

871. **Pepper for Cabbage Worm.** I see Red Pepper dust recommended for Cabbage Worms. Would the Cayenne answer as well?—J. E. W., *Reno Co., Kas.*

REPLIES TO INQUIRIES.

751. **Unhealthy Zonal Geraniums.** Your Geraniums have been overwatered during the past winter, and besides this, their pots have been imperfectly drained. You should plant them outside at once, and when well rooted trim into shape. By fall they will become nice, shapely plants, when they can be taken up and potted. In potting use porous or soft-baked pots and let them be proportionate to the size of the plants. See that they are well drained. If the pots are one-third filled with drainage it is none too much. Give them a compost consisting of two-thirds turfy loam, one third well decayed manure with a fair sprinkling of bone-dust.—C. E. P.

732. **Red Raspberry Roots in Asparagus Bed.** Cut them off with a sharp hoe just beneath the surface the instant they are noticed. Salt applied in the manner some one proposed might possibly injure the Asparagus.—C. E. P.

736. **Angle Worms.** A good dressing of superphosphate of lime will banish them. Or dissolve one-half peck of shell lime in forty gallons of water, allow it to settle, and water the affected places with it.—C. E. P.

742. **Applying Wood Ashes.** I would not place them close to the stems of the trees and vines. Spread underneath the branches, or as far as the roots are likely to extend, and incorporate with the soil by means of a fork, working it in as thoroughly as possible.—C. E. P.

743. **Ashes for Onions.** Properly applied they will be of decided advantage for Onions and all other garden crops. You should have thoroughly incorporated them with the soil before sowing the seed.—C. E. P.

749. **Salt for Potato Land; Soot.** Salt is of little or no value for Potato land, and soot can be used to greater advantage for other purposes.

757. **Potatoes: two Crops a Season.** I have often tried this on a small scale in this vicinity (New York City), but with no success, the second plants being always killed by the frost about the time their blossoms opened. This was in the most favorable seasons.—C. E. P.

758. **Hen Manure for Grapes.** When dried and well pulverized this is an excellent fertilizer, and can be used either with or without ashes, as may be most convenient. Apply liberally, working it in well around the roots with a fork.—C.E.P.

765. **Covering Bare Spaces on Rose Beds.** I would sow underneath them about May 1st seeds of some such annuals as Petunias, Phlox Drummondii, Mignonette or Double Portulacca.

746. **Green Cabbage Worms.** These can be prevented from destroying the plants while small by dusting them freely with White Hellebore powder. It is not safe, however, to apply it after the plants begin to form heads.—C. E. P.

764. **Dandelions in Meadows.** The only way in which you can cure your meadows will be to break them up and plant some root crop for one or two years, then they may be reseeded.—C.E.P.

763. **Dutchman's Pipe from Seed.** Sow as early in the spring as possible in a well-drained pot or pan filled with light, loamy soil, place in a warm moist situation and as soon as the young plants are strong enough to handle pot off into four-inch pots, and grow on carefully until these become well filled with roots, when they can be planted out on a nicely prepared border. Protect during the winter by a slight covering of Evergreen branches, and early the next spring remove to their permanent situation, giving them a deep moderately enriched soil.—C. E. P.

755. **Grape-vines from Cuttings.** Presuming that native varieties are referred to, and that they are to be rooted in the open air, I would when pruning in the autumn or winter preserve as much of the well-ripened wood as possible, and after cutting into lengths of about one foot, bury in boxes of sand and place in a cool cellar until spring, when they can be placed outside, choosing a moist and somewhat shaded situation. Plant in mellow soil in a slit made by a spade and firm the earth well about them. Keep them in rows eight or ten inches apart, and five or six apart in the row. If possible let each cutting have three buds, one at the top, one at the bottom, and a third in the middle, to be left at the surface of the ground when the cutting is planted. Thus treated no mulching is required, but they must be kept free from weeds.—C. E. P.

754. **Blackberry Propagation.** In the fall carefully dig up plants two or three years old, retaining as many of their roots as possible. These roots should be cut into pieces two or three inches in length, according to their size; the smaller the root the longer it should be cut. Cut the roots in the fall and store in boxes of sand placed in a dry cool cellar until spring. As soon as the ground can be properly prepared scatter them thinly on a nicely prepared border cover with two inches of light loamy soil. Choose a moist partially shaded situation, keep clean and free from weeds, and by fall you will have a good supply of strong healthy plants.—C. E. P.

814. **Forcing Roses in Succession.** It might pay to force American Beauty Roses two winters in succession if not too much exhausted with the first winter's crop, but it is not in accord with the generally accepted rule for treating winter-blooming plants. Probably it would be more profitable to buy new stock.—W. F. L.

823. **Peaches and Grapes Together.** It is generally deemed advisable to let fruit trees have the benefit of the whole ground after they attain well developed maturity. While young and getting established cultivated crops are admirable and to be commended to ensure proper culture and fertility to the young trees. Vineyards are usually planted with the same view of ultimately occupying the whole ground. Exceptions being made in favor of Strawberries and Currants. A few years ago I grew a row of young Peaches between my Grape canes which are nine feet apart, intending to set the trees when large enough on a new piece of ground I contemplated clearing. The ground was not ready when the trees were. I headed them back for another year's growth and still the ground was not in condition. It was a stony, stumpy piece, and was not sufficiently subdued till last year. Meanwhile the trees gave promise of fruiting and were allowed to stand, and they still stand and are loaded with the third crop of fruit which was so tempting that my annual resolution to grow them out has been postponed, and the Grapes have suffered too little to cause any regrets; of course I have given extra feed that neither need starve. Have thinned them out annually but still they stand close together; have grown tall, far above the vines, and the protection afforded to each other has, I think, given me fruit. I should have had none had they been exposed in orchard. This experience leads me to think that your correspondent's plan is both feasible and commendable, care being taken to have abundant food supplied for all their needs. Potash should be a prominent element as it enters largely into the composition of the Peach stones and Grape seeds.—E. Williams.

848. **Raspberries Dying.** As both plats referred to are in about the same condition it does not seem as though the trouble could really be attributed to treatment, manure or soil. I certainly would not venture an opinion from above date. The Gregg is not hardy here and I should not expect it to be in Pennsylvania.—E. Williams.

829. **Currants and Gooseberries.** Cuttings are taken from strong shoots of the present year's growth, as soon as the leaves are ripe. Cut about six inches and set them in the open ground in rows 15 inches apart, two inches in the row; leaving two inches above the surface, and at the beginning of winter cover with loose manure, removing in the spring. Cultivate well the following season, and in the fall they may be planted out permanently.—E. E. S.

838. **Seed Grown Flowers for Ribbon Lines.** The following will doubtless prove satisfactory: Pansy, Aster, Candytuft, Petunia, Portulaca, Canna, Verbena, Stocks, Mignonette, Sweet Peas, Phlox Drummondi, Ageratum, Perilla, Centaurea and Golden Feather. Notes on the use and arrangement will be given in future issues.—E. E. S.

853. **Smilax.** Turning yellow is probably due to its natural habit of resting after a season of growth. Assuming such to be the case I would advise watering sparingly for five or six weeks, then give a top dressing of rich soil, cut off all old vines and increasing the water. Give a winter temperature of 50° to 60°.—Elmer.

855. **Ants in Lawn.** Obtain pieces of coarse sponge; dip them in sweetened water and place on old dishes where the ants abound. When the pieces are covered with ants throw them in boiling water, afterward washing them out and renewing the process till the colony is destroyed. —*Our Insect Foes.*

867. **Asparagus.** The average length that Asparagus is cut is about six or seven inches, the size of the bunches depending upon the market —ordinarily a good guide is the quantity that can be held in the hand. The bunches shipped from the South are larger and weighing frequently about two and a half ponnds. The preferable method of shipping is by the use of a flat ventilated box any size, high enough for one layer of bunches standing on the butt ends, any interstices being filled with moss or similar soft material.—E. E. S.

868. **Verbenae Rotting.** *(a)* The cause of Rotting probably is that the ground contains an excess of rank, that is to say, not sufficiently rotted stable manure. If on such soil the Verbenas were planted in a two inch top dressing of common soil the trouble likely would cease. *(b)* For a few plants hand picking and destroying would be practicable. For a large number of plants London purple and Paris green mixed with water, at the rate of one ounce to six or eight gallons, would probably prove effective.—E. E. S.

828. **Black Currants not Fruiting.** The Black Naples is not noted as a heavy cropper in our experience. Perhaps the luxuriant growth is the trouble. Possibly the rich prairie loam contained too much nitrogenous matter and too little potash, or other fruiting elements. Pruning close to the ground would seem to invite a repetition of the trouble—a more luxuriant growth —which does not seem desirable. Root pruning might be beneficial, but lacking experience in such soil cannot prescribe definitely.—W.

870. **Tomatoes.** *(a)* The most likely reason for their non-bearing is too rich a soil, the growth ruining the plants. If Cabbage or Cauliflower were grown upon the ground one year, it is probable that Tomatoes would succeed all right. *(b)* For the general crop about March 20th the seed is sown, and several weeks later the plants are ready to prick into another fresh hot-bed, at the rate of two hundred to a sash. When ready for the second transplanting, an old Lettuce bed is suitable, or they may be grown singly in pots or boxes with good results as to earliness, all the air possible being now essential till planting out time between the middle of May and June first. Tomatoes like a good soil, but not freshly manured. In the field they are planted about four feet apart, in rows six feet apart. Much of the success and profit depends on skillful growing of the plants, the earliest usually bringing the most money. Livingston's Beauty and Favorite are good market sorts.—E. E. S.

871. **Pepper for Cabbage Worms.** Cayenne Pepper should certainly be as effective as the Red Pepper for the purpose spoken of.—E. E. S.

821. **Mulberry Propagation.** While in Illinois we tried every known form of budding and grafting the Mulberry, saw others try them on different species and varieties with but very little success, and we conclude that the only sure way of propagating a variety is by cuttings in a propagating house under glass. They are grown to some extent by the well known mode of root grafting. The grafts after being made are planted in a propagating bed in pots, with some bottom heat until they have made some growth and then transplanted. They all grow readily from seed, but of course vary like other seedlings. —D. B. W., *San Francisco, Cal.*

830. **Evergreen Seedlings Failing.** The growing of the Evergreen from seeds is an art that one must learn to make it a success. The trouble with this correspondent was that his seedlings "damped off," *i. e.*, they were attacked at the surface of the ground with a fungus disease or ferment (a parasitic fungus) that destroyed the tissues of the plant at that point. Or, if the young seedlings were exposed to the direct rays of the sun they may have burned off at the surface of the soil. To grow Evergreens from seed with certainty, the seed should be sown in carefully prepared beds four feet in width, and then covered over head with proper lath or muslin shades, easily removable immediately after a rain, or after watering these should be removed for a short time, but not for long, so that the dampness can evaporate; and if damp, and rain should be continuous for sometime, the grower should have at hand fine dry soil to sprinkle freely among the young plants. Without, one should thoroughly post himself in the art of growing them, he had best let them alone, for there are many kinks in their successful management, too many to give in detail. And it will, as a rule, be found much cheaper to buy such seedlings from Robert Douglass & Sons, Waukegon, Ill., or other large growers. They cost but little and their management after the first year is very simple. —D. B. W., *San Francisco, Cal.*

831. **Plum Rot.** Plum rot is a parasitic fungus disease or ferment, preying on the pulp of the Plum, and perhaps all other stone fruits, and probably on the pulp of many other fruits. It does not seem to attack fruits unless the skin is broken, and generally in seasons favorable to to the fungus it layers its attack, or finds entrance to the pulp when punctured by the Plum curculio, Plum gouger, plant bugs and leaf lice, and often through lesions in the skins of the fruit, caused by sudden wettings and dryings. There is no cure for it. Its prevention may be possible from spraying the growing fruit with a weak solution of sulphate of copper (blue vitrol) or other fungicide, or dusting the fruit directly after each shower with sulphide of lime. Another prevention is to destroy the above named insects with the arsenical poisons by spraying with them as before mentioned in this journal. Then sulphate of copper would be a good addition to the last spraying. This rot in growing fruits is completely under the control of the weather, the humidity and weight of the atmosphere, temperature, etc., as we cannot control them, we cannot control the sparadic fungus diseases that ruin our fruits. Therefore, to apply preventives, and of these we know but little, is the best we can do. I have seen Cherries rotting in Illinois so fast on the trees that one could almost see it spread through the fruit. This at a time of rain, with a very low barometer; and seen it stopped almost instantly by the wind changing to the northwest with a high barometer, with no more rot that season. I have seen the same thing happen with Peaches and Plums, though not so marked. Were not these fungus parasites confined to very narrow and peculiar conditions and environment, in which only they can propagate and spread, they would soon lay out most other forms of life.—D. B. W., *San Francisco, Cal.*

809. **Quantity of Paris Green and London Purple.** One pound of pure Paris green or London purple to 200 gallons of water is sufficient. More will cause the foliage to burn.—E. L. Wright, *Livingstone County, Mich.*

869. **London Purple for Cabbage Worms.** While it might perhaps be possible to so carefully apply London purple to the Cabbage, confining it mainly to the outer leaves, that no bad results will follow, still we could not recommend this poison generally for the purpose because of the danger that would attend its common use on the Cabbage. If you get a fresh article of pyrethrum it is quite sure to be effective.

779. **Beet Keeping Grapes.** The best keeping Grapes are Vergennes, Mary, Isabella, Diana, Agawam, Clinton, and Salem, keeping in the order named. Have tested about seventy varieties for several years. Vergennes last until spring and Isabella until March.—F. L. W.

788 **Salt for Quince, etc.** Have experimented twelve years and consider salt of no value to Quince or Pear. F. L. W.

817. **Black Ants.** Lime scattered freely over ant hills and around their haunts will drive them away. Ashes sometimes are effective.—F. L. W.

804. **Setting Oat Strawberries.** Layered Strawberry plants are as good, and will, if properly planted, produce as good a crop next season as pot-grown. We never pot plants for our own use.—F. L. Wright, *Mich.*

842. **Chestnuts for Illinois** Depends on character of soil, they thrive well in Illinois, prefers sides and neighborhood of hills, with dry, sandy, or gravelly soil; will grow in almost any soil except wet ones. Soils underlaid with sand or gravel are most suitable, should not be planted where subsoil is liable to be saturated with water. Trees from ten cents each, $1.50 per 100 for 1 year seedlings, to 50 cents each, $25.00 per 100 for five to seven foot trees.—J. J. Harrison, *Lake County, Ohio.*

864. **Unfermented Grape Juice.** The juice is crushed by a wooden fruit press, strained through flannel, and brought to boiling heat in a procelain kettle, bottled immediately, and sealed with corks and wax. It must be kept in a cool, dark place, just above freezing, and handled as little as possible.—S. D. Powers, *Norfolk County, Mass.*

774. **Curled Leaf on the Peach.** This injuious deformity of the Peach leaves has been ascribed to plant lice and other insects, but is now known to be caused by a minute fungus known to science as *Exoascus deformans.* This minute parasitic plant makes its appearance in early spring and causes the foliage to twist and curl out of natural shape. The fungus is not distantly related to the one causing the black knot on Plum and Cherry trees. It attacks healthy and diseased trees alike and works chiefly within the tissues of the leaf, hence no external applications can avail. No better remedy is known than to cut away one-half of the new growth each season and practice thorough cultivation during the earlier part of the season, keeping the land sufficiently manured.—E. S. G.

780. **Summer Pruning for Raspberries.** The tips of the black-cap varieties should be pinched as soon as the young canes attain the height of two to two and one-half feet. The canes will increase considerably in height after they are pinched. It is best not to pinch back the tips of the Red Raspberry.—E. S. G.

794. **Gooseberries Mildewing.** I am trying this season spraying the bushes with a solution of sulphide of potash (sometimes called "liver of sulphur") at the rate of half an ounce to the gallon, with good success. The spraying should commence early in spring and be repeated after every hard rain until toward the end of summer. Bushes of the Industry Gooseberry thus treated are free from mildew and are making a good growth, while others close by not treated, are making a stunted growth and bringing no fruit to maturity. E. S. G.

815. **Works on Botany and Greenhouse Plants** Gray's "Manual," and Henderson's "Hand-book of Plants" are good.

809. **Paris Green and London Purple** An ounce to five gallons is abundance.—E. S. G.

839. **Datura Propagation.** Yes, it can be easily increased by cuttings of the half-ripened wood.

840. **Grafting Marechal Neil Roses.** Instead of grafting I would bud them. This can be done at any time during the months of July or August. For stocks the Manetti is generally employed. But I have seen grand flowers produced from plants worked on Solfaterre and La Marque

841. **Rhododendron Protection.** Mulch well with leaves and protect by covering with evergreen branches. I suppose that it is growing in a situation protected from cold winter winds, and this is all the treatment required.—C. E. P.

848. **Raspberries Dying.** *(a)* They are probably affected by a blight with which we have had no experience. A quart of wood ashes or a little potash might help them. It it does no good it will perhaps be best to dig them all out and burn, planting again on ground on or near which no Raspberries have been grown for several years. *(b)* Yes. D. N. Losh, *Erie Co., N. Y.*

738. **Layering Strawberry Plants.** Pots from two to three inches in diameter are the most suitable. These should be filled with soil similar to that in which the Strawberries are growing, and plunged to the level of the surface. Then the layers or runners can be laid on the pots and held to their places by small stones. If all is favorable they will be well rooted in about two weeks, when they can be cut off, and placed in a shady situation for four or five days before they are planted out. After they are cut off water must be very freely given until they are planted out. The earlier these plants are set out the larger and finer the crop next year.

752. **Culture of Freesias.** Freesias require but little skill or care to cultivate them successfully. They should be potted in October, and treated precisely as Hyacinths until started into growth, which can be done as soon as the pots become well filled with roots. Water should be sparingly given at first, but as growth commences the supply should be increased. After the season of flowering and growth is over gradually reduce the supply of water, and when the plants pass into a state of rest, store the pots in a dry place until October, when they should be re-potted for another season. They prefer a compost composed of two-thirds turfy loam one-third well-decayed manure, and a fair sprinkling of sand. Use porous or soft-baked pots, and see that they are well drained. In potting, remember that to be effective from three to six bulbs should be placed in a pot, as for instance a four-inch pot would require four or five bulbs, according to their size.—C. E. P.

737. **Cauliflower Slug.** I don't understand this query. Do the pests attack the stems, roots or leaves?—C. E. P.

750. **Worms in pots and Fern Cases.** A thorough watering with lime water once or twice will destroy them.—C. E. P.

756. **Propagating Magnolia grandiflora.** Sow as soon as gathered, in a nicely prepared cold frame. Water carefully and keep clear of weeds. Shade from hot sun by means of a lath frame, and avoid extremes of drought and moisture. Or if you have the aid of a greenhouse sow in shallow, well-drained pans filled with turfy loam and keep in a warm, moist situation. When well up, and the weather permits, plant out carefully in a cold-frame, treating as above advised.

757. **Potatoes: two Crops a Season.** Yes, but the second crop will not, as a general thing be as good as the first. We have had reports from parties who raised two crops a year of Lee's Favorite. Any very early variety will do the same. F. FOND, *Ravenna, O.*

757. **Mushroom Culture.** (*a*) Perfectly well. (*b*) Yes, providing the manure maintains a temperature of at least 60°, and the surface of the beds is covered over with straw. (*c*) When the crop is done, don't make over the beds, but completely remove them and replace with fresh beds. Good second crops, however, are often obtained from beds, but we have had best success by cleaning the old beds right out as soon as they have finished their first crop. We do not recommend spawning beds more than once when they are fresh.—W. FALCONER.

798. **Roses from Cuttings.** Before I had the conveniences of a greenhouse I succeeded in each of the following ways: 1st. By summer propagation, taking off three inch cuttings having two or more eyes at the base, put in a shallow box or saucer of sandy soil, then place under the north side of thick foliaged shrubs, keeping moist till well started, when they should be transplanted. 2d. By rooting in bottles of water. 3d. Layering, this being done principally with the hardy sorts, the first two being most applicable to Teas and other tender kinds.—W. F. LAKE.

813. **Stove Plants.** Broadly speaking they are those requiring a night temperature of not less than 55 to 65°. In other words they are hot-house plants, requiring more heat than most greenhouse subjects, to obtain best growth. Among such are the Croton, Encharis, Stephanotis, Coleus, Begonia, etc. W. F. L.

801. **Fir Tree Oil** is an English combination of hydrocarbon oils, made soluble in water, for destroying insects infesting trees and plants, both at the top and roots.—W. F. L.

844. **Marguerites.** The plants with thick stems that you saw are the result of several years' culture, and with but little trouble you may get equally large specimens. Paris Daisies are of remarkably easy culture, and are best grown in the open air through the summer months in a sunny place. Young plants should be shifted along as the pots get full of roots, and when in the course of a year or two they come into eight-inch pots they may be allowed to remain in them for some years, as by giving some liquid manure occasionally, and taking care that they never fail for want of moisture, they may be kept in a prosperous condition. Paris Daisies do not care for much rich food; they flower better when the roots are rather confined, giving them good food as they need. Good loam with a little leaf soil is the best compost for them.

808. **Increasing Amaryllis Johnsonii.** I have never been troubled to get an increase, often it is larger than I desire. My mode of treatment is practically the same as stated on page 220 of the July number, excepting when planting out, to place in a sunny position, with no more than two hours' shade at midday, taking out of the pot and setting so deep that the neck of the bulb is covered. They should have no water excepting that supplied by rains.—W. F. LAKE.

845. **Fly on Chrysanthemums.** The plants will be effectually crippled if the parasites are not destroyed. They usually cluster thickly on the points of the shoots. A good plan is to take the shoots in the hand, and with a pepper-box dust amongst them with Tobacco powder. If they are dwarf plants with numerous shoots, the best way would be to syringe with Tobacco water or soft, soapy water strong enough to kill them.

846. **Phloxes Bare at Bottom.** The Perennial Phloxes go bare of leaves at the bottom through mismanagement. There is one error in your treatment, namely, the forking in of the manure in spring. Phloxes make a thick mat of roots near the surface, and search every particle of the soil for food and moisture; they also start into growth early. Any disturbance of the soil about them means wholesale destruction of the roots and a check to the plants, which hardens the lower parts of the stems and makes them drop their leaves. It cannot be too widely known that the greatest part of the vital energy of plants is concentrated in the tips of the feeding rootlets; there cells form most quickly, and any injury to these rootlets weakens the life of the plant. Any disturbance of the soil about a plant should be well clear of the roots, and should never be done while the roots are growing. A light hoeing of the surface that does not go deep enough to disturb the roots will do good and not harm; but that is impracticable in the case of shallow rooting plants like Phloxes. I do not find they take kindly to manure unless rotted to powder and mixed with the soil before planting. The only way to get a really good bloom is to strike cuttings early every spring, and plant out in good well-prepared soil in April, keeping the plants growing straight on from the first. They may be left in the borders a second year, but only a few very strong and mostly inferior roots will grow on from year to year without moving.—J. D.

854. **Cyclamen Treatment.** When the bloom is over, the pots should be plunged in a rather shady border. Leave them there until they commence to grow again, then take them up, turn them out of the pots, remove what old soil you can without injuring the roots, and repot in a mixture of loam, leaf-mold and some silver sand; rotted manure may be added with advantage; and cover the corm only half its depth. By following the above you should succeed well. They are rather troublesome to raise from seed; you would have to wait two years or more before getting them to a blooming size.—C. W.

850. **Muslin for Hot-beds.** I have used the oiled muslin only on hot-beds in the spring, and never grew better plants under glass in forty years. I doubted if they would do to winter things under, as the snows get too deep with you and would break through. The light through the muslin is sufficient to give the plants the right color and no appearance of blanching whatever.—S. MILLER.

862. **Camellia Ailing.** Your Camellia is in a bad state at the root, and will never improve until it has been again properly re-potted. The leaf sent indicates a sour soil and the retention of moisture about the roots in excess of their requirements. It should be shaken out, all the old soil removed, the roots trimmed, so far as the removal of the decayed portions, and be re-potted in turfy loam with well packed drainage in as small a pot as it can be put in consistently with its size. If this is done at once, and it is kept rather close and warm, with but little water at the root, and regular syringing overhead, it will probably regain its health, and make a good growth for blooming next season.

739. **Watering Strawberry Beds.** Nothing would be better than an abundant supply of water during their fruiting season, and a good soaking twice a week would be none too much. It will not make the berries any softer.—C. E. P.

759. **Arsenical Poisons and Bees.** There is no use of applying arsenical poisons to Apple trees for the codling moth until the petals have nearly or quite all fallen, at which time the dried blossoms will contain no honey, and so will no longer attract the bees.—E. S. G.

776. **Improving Tankage.** We packed our hams and shoulders in clean, dry ashes for years successfully, but have abandoned it. Now as soon as the meat is taken out of the pickel and well dried we tie them up in canvass sacks, hang them up in the smoke house, and when sufficiently smoked hang in a dark place until needed. Lime is a preserver and could not fail to answer the purpose. I should prefer it to ashes now if I were to pack in tanks.—S. M.

852. **Worm on Alternanthera.** A solution of one-half ounce of Paris green, or same of common Arsenic, to four gallons of water, stirring the powder, after first making it into a paste, into the water, and syringing any affected plants, should kill every kind of worm that eats foliage. The liquid should be stirred frequently while it is being applied.

824. **Fertilizer From Blood.** If you refer to fresh blood, the most convenient way to use it will usually be to throw it on a manure pile at the rate of, say, not to exceed, five gallons to a ton. In making hot-beds, a little blood will stimulate fermentation. If you refer to dried blood it is best to use it in connection with superphosphate. It is not necessary to mix the two together before sowing them. They can be sown separately or mixed, as most convenient. Nothing is gained or lost by mixing them. The proportion in which it is best to apply them depends on the kind of crop and the condition of the land. A fair average will be 300 pounds of superphosphates per acre, and from 250 pounds to 500 pounds of dried blood per acre. Dried blood contains about 11 per cent. of nitrogen; good stalk manure, about eleven pounds per ton, so that 100 pounds of dried blood will furnish as much nitrogen as one ton of manure. The nitrogen in the dried blood however, is in a much more available condition. So far as the fruit crop is concerned, it is safe to calculate that 100 pounds of dried blood will furnish as much nitrogen as three tons of manure. If you wish to use dried blood as a substitute for manure, you may calculate that so far as the nitrogen is concerned, 500 pounds of dried blood is equal to fifteen tons of stalk manure. For a crop that you will use more stalk manure, use more dried blood in the above proportion. As a rule, it is not necessary to use more than the 600 pounds per acre of superphosphates for any crop. Gardeners sometimes use a ton per acre, but they are wasting their money. They had better buy dried blood, or some other nitrogenous manure, and use in connection with the superphosphate. —JOSEPH HARRIS, *Monroe County, N. Y.*

822. **Climbers.** *Actinidia polygama* is the only species with which I am acquainted. It is a native of Eastern Siberia, and is perfectly hardy in this vicinity. It is one of our most valuable hardy vines, being quite ornamental, of rapid, vigorous growth, and perfectly free from all insect pests. Its rich green foliage is produced early in the spring and remains until late in autumn. All these qualities make it very valuable and desirable for covering arbors, trellis work, etc. The flowers are produced in auxilliary racemes; white and fragrant. All vines are not fertile, but those that are bear clusters of small edible fruit. It succeeds best in a very deep, well-enriched soil. I am not acquainted with the long-fruited variety you refer to. *Periploca Græca* is a hardy deciduous climber, growing from ten to twenty feet high. The flowers, which are quite insignificant and of a purplish color, are produced in auxilliary clusters during the months of July and August. It is a native of the south of Europe, and succeeds best in a deep well-enriched soil. It is well adapted for covering arbors, trellis work, etc., as it is free from all insect pests, and after it becomes well established of rapid, vigorous growth. The juice of this plant is said to be exceedingly poisonous, so it is well to exercise a little care on this account.—C. E. P., *Queens, L. I.*

836. **Early Strawberry.** The one berry that I can recommend with confidence as being earlier and more productive than the Wilson, is the Cresceut, especially as it succeeds everywhere. It requires very little skill or care to grow it, but after one has it, it possesses so little real merit as a fruit, that one can not prize it. The May King is just as reliable, about as early, a little less productive, of larger size and better quality, decidedly a better berry for home use. From what I have seen and heard, Warfield's No. 2 is more desirable than either of the above, and will probably supersede them. As it may be obtained from almost any nurseryman, I would advise all to try it in a small way. The Covell is the earliest of all, quite productive, and a firm, attractive-looking berry of good flavor. All that prevents it from being very valuable is its small size. In the matted row, with ordinary culture, the fruit is about an inch in diameter for two or three pickings, and with better culture the size is little if any larger. I can scarcely recommend it for market.—M. CRAWFORD, *Summit County, Ohio.*

811. **The Cinnamon Rose.** (*a*) Cinnamon Rose is very common in Michigan, being found around nearly all the old houses. It was quite popular once, but is much neglected now.—F. L. W.

806. **Mulberry Dropping its Fruit.** Russian Mulberries will not fruit unless two or more trees are set close together.—F. L. WRIGHT.

804. **Setting out Strawberries.** My experience is that well-rooted young plants, set out on well prepared soil just before a rain, will fruit the following season as well as potted plants. But I have never been able to secure a full crop the following season from plants set in summer, whether potted or not.—E. S. G.

THE COMPLETE GARDEN.*

XVIII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 232.

Pruning. The Cherry is readily controlled as to size and form of tree by suitable pruning. Usually it is trained as a standard with the trunk four or five feet high in the clear, and this does very well wherever room is abundant and in climates where the bark is not liable to burst. In grounds of limited area the low standards with two or three feet of trunk or the dwarfs made to branch within a foot of the soil are the most suitable. Sometimes the Cherry is grown as an espalier against a north wall, with a view to extending the season of its fruit. Aside from working the slow growing sorts such as the Dukes and Morellos near the ground on the Mahaleb stock to form mere bushes, the variations of form alluded to are principally secured by pruning to a higher or lower trunk, and in confining or extending the growth by suitable after-pruning. Root pruning is also resorted to, to effect dwarfness. In general the main points to be secured in pruning the top is to have a well-balanced head, which, while open enough to admit streams of sun and air freely throughout its parts for preventing rot, is yet sufficiently close to break the force of the sun's intense heat on the branches and trunk of the tree. Young succulent shoots should be removed as soon as they appear.

A Selection of Varieties. For a list of thirteen varieties out of many which have been tested on the writer's grounds, the following have proved their value for general productiveness and reliability.

HEART CHERRIES.	Elkhorn.
Black Tartarian.	Yellow Spanish.
Early Purple.	DUKE AND MORELLO CHERRIES.
Elton.	
Governor Wood.	Early Richmond (Common Red Sour.)
Knight's Early.	
BIGARREAU CHERRIES.	May Duke.
Napoleon.	Montmorency.
Rockport.	Morello English.

THE CURRANT.

This healthful, handsome and productive bush fruit is of the easiest culture. It will indeed yield fruit under quite unfavorable circumstances; on the other hand no fruit better repays for clean culture and a rich soil. Its compact form of growth adapts it to close garden quarters, while its ability to thrive in partial shade is again in its favor. The fruit lasts long on the bush and affords one of the most healthful acids, being equaled in this respect only by the Lemon.

Soil and Culture. The Currant thrives in any tolerable soil. Under generous culture, four to five feet apart is the right distance for the plants. The plants should receive clean culture for the best results. Mulching is also in order, enjoying as the plant does a cool, moist soil.

Training. It is of importance that a succession of strong branches be maintained, as the fruit is produced upon the shoots two or more years old. The most simple course, and usually satisfactory is to let the plants sprout from the root, allowing only from four to seven of the strongest shoots to grow, removing the others and also all old wood as signs of feebleness appear. By dressing over the roots with stable manure each fall the bushes may be kept in a vigorous condition almost indefinitely.

A more pleasing form is to train as a bush or small tree with a stem of less than half a foot in height, and a head comprising six or eight main branches well distributed. The growth should be annually shortened one-third or one-fourth, to cause new side branches and stronger fruit spurs. To insure against suckers the lower eyes on the stem should be cut out before the planting.

The Currant can be trained both as an espalier against a wall or trellise where space must be economized, and as a pyramid to form pleasing garden objects. For the former use, the branches may be arranged either fan form or else by securing two strong ones for horizontal arms, and from these allowing laterals to proceed upwards. In training pyramids the main principle is to obtain a strong central shoot at the start, and by heading back secure the required side shoots. These then by summer pinching should be treated to keep up an equality of growth, and to check misplaced or superfluous ones, aiming at obtaining a handsome pyramidal outline.

Varieties. Red. For general use and for marketing this color is the best. The most valuable sorts: Cherry, Fay's Prolific, Victoria, Red Dutch, Versailles. *White.* White Grape, White Dutch, Dana's White. *Black.* Black Naples, Crandall.

THE GOOSEBERRY.

This fruit, which in England leads all other bush kinds for dessert purposes, succeeds not so well in this country owing to our hot and dry summers which tend to cause mildew on the plants and fruit. The kinds most commonly grown are the offspring of the native sorts, which, although comparatively free from mildew, are inferior in quality to the English kinds. Still there are many painstaking gardeners who succeed in raising the foreign sorts in a very satisfactory manner by planting under the shelter of fences, trees or buildings, and through mulching or other means keeping the soil cool and moist. A deep, substantial soil of northern aspect should always be chosen to plant the Gooseberry if possible.

Culture and Training. The indications being clear that the great enemy to this plant mildew, is invited by an enfeebled growth, which is caused by our dry climate, one of the first things to be aimed for in its cultivation is a vigorous condition of the growing plant. This conclusion is borne out also by the fact that young plants usually bear well for several years, but as they become stunted the fruit is so affected by mildew and rust as to be worthless.

The best form of bush is one having a short trunk, say four inches in length, from which arise about six main branches, distributed at equal distances apart. As fruit buds and spurs are only produced on wood two years old or upwards, it is important to always keep a lookout for enough of these bearing branches. Starting with a young plant which should be disbudded below where branches are wanted, the best course is to prune away all but three properly situated branches. These should be cut back to two buds from one of each of which a shoot is to be raised in the first season. These at the fall pruning are to be cut back to about three buds, and two shoots allowed to form the next season from each, giving six altogether by the end of the season. After this the shoots are annually cut back from one-third to one-half and the formation of lateral branches and fruit spurs encouraged. When the plants feel the effects of liberal bearing some of the fruit branches should be headed in and replaced by strong young shoots for future bearing. As a rule the American varieties need much closer pruning than do the English. It is well to provide new shoots for replacing any that become subject to mildew. An annual top dressing of manure or wood ashes, which the latter suits this plant admirably, is necessary along with judicious pruning for securing the best results.

VARIETIES. *American.* Downing, Houghton, Smith's Improved. *English.* Cream Bob, Whitesmith, Green Ocean, Industry.

(To be Continued.)

Chrysanthemums as Standards.

Chrysanthemums are not commonly grown as standards, owing to the time and attention they require, while some do not approve of the close training of the shoots, as is sometimes practised. Pompon and Anemone pompon varieties are well adapted for this purpose, being free-flowering, while the growth is generally stocky. Where close training of the branches is practised, the incurved varieties are to be recommended, and some few of the Japanese kinds. In all cases where standards are required, the strongest plants should be selected from the earliest struck batch of plants intended for the production of large blossoms. Those selected for standards should not be topped, but secured to the upright growth of the single stem by fastening to a small stake as a preventive against accident. Treat the plants in the same way as for other purposes as regards potting, position, and the like.

The height of stem will depend upon circumstances. Some sorts naturally branch into new growth much earlier than others; the tallest need not be more than three feet high before the formation of the head is commenced. This is a suitable height for the incurved section, while the pompons are best when the head is formed on a shorter stem. If the plants grow to this height before their first natural break so much the better, but if a break occurs earlier, the shoots so formed must be reduced to one, which is allowed to grow until the necessary height is reached. The topping induces other shoots to form, which are the foundation of the future head. Reduce these to four, and when they have grown six inches long top them, continuing this process until the requisite number of branches are obtained to cover the trellis. Topping should not take place later than the middle of June in the case of incurved varieties, but pompons may be topped a month later. Some of the dwarf varieties of the last-mentioned section may be allowed to grow without topping after the first break occurs. The result is a mass of shoots and a profusion of blossoms the whole length of each stem.

When all fear of frost is past, place the plants in such a position out of doors that a light covering can be thrown over them should frost occur, which would otherwise seriously cripple the points of the shoots. The position finally selected for their summer quarters should be thoroughly exposed to the sun and air, but should be sheltered from east and south-westerly winds. About the 1st of June the plants will require their last shift into the pots in which they are to bloom. Those 11 inches in diameter should be used for the incurved and Japanese sorts, while 9-inch pots will suffice for the pompons. Plunge the pots to about half their depth in ashes, which keeps the roots cool during a hot summer. The roots are easily damaged by the continual rocking about of the plants by the wind; to prevent this three stakes are driven firmly into the ground in triangular fashion, to which the stake in the pot is connected. It is a mistake to attempt to produce too many blooms on one plant. Far better limit the number and have them of better quality. On plants of the small-flowered varieties of such incurved kinds as Mrs. G. Rundle, if the heads are grown, say, about two feet in diameter and about one foot four inches in depth, fifty blooms will be enough; but in the case of White Venus, a larger growing kind, not more than thirty flowers on heads of the same size. As the foundation of the head is laid, the shape the plants are to assume must be determined. Pieces of galvanized wire, two feet in length should be bent over, each fastened to a circular ring as the foundation, and all secured to the top of a stout stake fixed in the center of the pot. Fix the

framework from the bottom wire to the centre stake, with the aid of two pieces of stout wire stretched across from one side to the other. Commence training the branches as soon as they are long enough, as the foundation is more easily formed at this stage than when the shoots are longer and harder. Early in September the bloom buds will form; disbud to one on each branch in the case of incurved and Japanese sorts, and when they are swelling, give the plants their final tying. In this way severe training is not so easily detected, as if the final tying of the shoots is left until a few days before the plants are in bloom. Supply the plants freely with water and occasional stimulants, in which soot is included, as by this means the foliage will be improved.

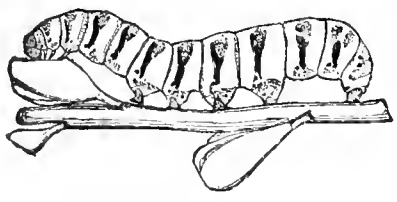
Mildew should be carefully guarded against, using the usual remedies at once upon its first appearance. The short, stout-growing kinds of pompons will not need any support beyond a stout stake in the centre of each pot, and an occasional support from one main so the other with bast. No disbudding of flowers is required in this case.

The Purslane Caterpillar.

We herewith present an illustration of a worm which in some parts of the west has appeared in sufficient numbers to work the destruction of the common Purslane. The engravings are of the insects in its perfect and larvæ states, and were made from drawings by C. L. Marlat, Ass't Horticulturist of the Kansas Agricultural College, Manhattan, Kansas.

As to the history of this worm Prof. E. A. Popenoe, the entomologist of the College has, in substance the following to say: Popular speculation has been rife regarding the sudden appearance of this caterpillar so numerously as to affect the destruction of the everywhere prevailing Purslane or "Pussley"; fears have been expressed that, after destroying this weed, the worms would turn to useful plants for their food supply. Before this season (1887,) few observers not entomologists, had noticed its appearance, though this year they have been abundant throughout the State, judging from the reports that have reached us.

The following general account of the transformations of this species will be interesting: The egg, deposited by a moth of some beauty, is found on the underside of the Purslane leaf, of a flattened hemispherical form. The larvæ, hatched two or three days after the egg is laid, at first is yellowish green in color, with darker shading across the middle of the body which is timely set with black hair. At eight or nine days old, having been full fed and undergone four moultings, it it a smooth bodied



The Purslane Caterpillar.

caterpillar (Fig. 1) of a grayish color, marked with black dashes on the sides of each segment, shaded with salmon pink as indicated by the dotted areas on the figure. Their average size is rather smaller than the illustration.

The full grown larvæ enters the ground making a tubular burrow about two inches deep, and when in the pupæ state have the pointed oblong form and brown color of pupæ generally, with a few characteristic markings. It remains underground about twelve days, when it appears as a moth (Fig. 2) having head and forewings of a brownish gray color, with an irregular mark of creamy white on each wing, and variously colored markings on the remainder of its form. Four broods have been known to appear in one season, the last probable not leaving the pupæ state till the following spring; more observations being required for particulars of hibernation.

It was described by Grote and Robinson under the name of *Eusciarhopterus Gloveri* but now referred to the genus *Eudryas* and included in the family *Zygænidæ*, allied to several species of "blue catapillar" that are sometimes injurious to the Grape vine.

Success In Market Gardening.

W. W. RAWSON, ARLINGTON, MASS.

The application of manures is an important part of market-garden work, and well worthy of attentive study. As garden crops, to be of marketable quality, require to be grown quickly, it is plainly requisite that the land be brought into the best possible condition to begin with, and then that the artificial fertilizers or further manurings, whatever they may be, should be applied in such a way that the growing crops can readily reach and take up this supplementary nourishment.

We have recommended having the land ploughed once in advance of the first application of the manure. This gives a chance for the manure (especially if it is a little coarse) to be worked into the soil more thoroughly by the second ploughing than it otherwise would. However, except in comparatively few instances, the presence of coarse manure is a serious impediment and disadvantage in the process of cultivation. It should be in a fine state, reduced to this condition by slowly conducted previous fermentation, and should be very thoroughly intermixed with the soil.

Of course, as already said, it is very important that market-garden crops be grown quickly, and right here is the reason why quick-growing crops require more manure than others that take a whole season to complete their growth: it is because the latter have more time in which to feel about and collect their necessary nourishment from the soil and atmosphere; but the former must have their food in abundance, and it must be placed within easy reach of the feeding roots, or there will be a most decided shortage in the result.

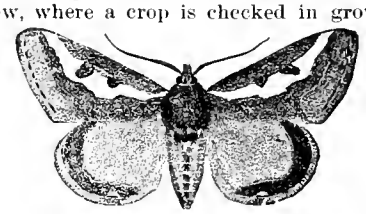
There are great differences in the requirements of the various crops, and no set rule can be given that will be adapted for regulating the quantity of manure to be applied to all crops and on all soils.

Where but one crop per year is to be taken from land which is already in fairly good condition, ten or twelve cords per acre of well decomposed manure would be considered, ordinarily, as a sufficient supply; but on land to be double-cropped, twenty cords would be none too much. This should be ploughed in lightly, so as to be left lying near the surface.

If the first ploughing should be done in the fall, the manure can be applied then, and remain lying out on the surface until spring, as it does not lose by so doing. During a dry season, unless the land can be properly irrigated or watered, a crop will manifestly be unable to draw the proper amount of nourishment from the soil, since all plant food of every description has to be not merely in a soluble form but actually in solution before it can be taken up and assimilated by the plants. For this reason it is becoming necessary, in view of the continually recurring droughts, to provide effectual means of irrigation.

Sometimes, however, a crop comes to a stand-still by reason of having exhausted all the fertilizing matter contained in the soil, of a sort available to its requirements; and in such instances the trained eye of the practical gardener can usually detect what is lacking for the crop; and he may supply the need by an application of some specific commercial fertilizer. It would be difficult to explain to a wholly unexperienced person just how to detect the wants of the crops, but a little acquaintance with their normal habits of growth will speedily teach one what he needs to observe.

It is imperative, even in an economical view, where a crop is checked in growth



Butterfly of Purslane Caterpillar.

from want of fertilizing matter, that some quick-acting fertilizer be promptly applied, for upon the question of a few dollars' expenditure at this crisis may depend all the difference between a crop and no crop. Whenever the need of such an application occurs, it is better to sow the fertilizer broadcast than to place it directly on the hill and about the plant; and the labor of applying it is less. Liquid manure may be applied in a furrow opened about a foot from the row; more or less, according to the growth the plants have made.

Notes on Flowers.

MRS. J. LOVEJOY, MITCHELL CO., IOWA.

TIGRIDIAS are not appreciated as their merits deserve. A clump if well grown are in their season never out of bloom. They require considerable moisture, with partial shade from the noonday sun. The bulbs are not hardy; but there is no difficulty in wintering them in a cellar that will keep Gladiolus. But it is to be remembered that mice are exceedingly fond of these bulbs and care must be taken to keep them out of their reach. Gladiolus, Tigridias and Zephyranthes bulbs, Dahlia and Clematis, all delight in a wet season. This season here is one in which they are luxuriating in growth and bloom.

ROSES. Among the older teas—Letty Coles has proved a surprise in the size of its bloom and its fragrance. It fairly rivals the June Roses. Another very old one is a single carmine variety, that used to be growing in my grandmother's garden.

SALVIAS are very satisfactory plants in the fall, Splendens, Alba, Patens, a lovely blue, and Mrs. Stevens. The last named is a lovely maroon color and more of a shrub than plant as it grows in my grounds, attained a height of between five and six feet last season, and was one mass of bloom. They are a desirable class for grouping.

HOLLYHOCK HEDGE. I have a hedge of Hollyhocks, perhaps twenty feet long, in which they have been growing for five or six years, but never with better success than this season. The ground was thoroughly fertilized this spring, and a better growth or finer colors I never saw. Some of the colors are new to me, and it is evident that they are mixed and self-sown. I have ox-blood red, very brilliant; coral pink, a new color; rose pink, and a lovely variegated dark and light pink; black, and a lovely flesh color. These are all double and fringed—the improved kinds, just what I hhd planted at first, but the colors have changed from the first grown.

FERTILITY OF SOIL. There is one important item that I wish to mention in connection with my report of the strong growth of plants. We, who live on stock farms,

are not limited in the quantity of the best barn yard fertilizers. I readily understand how lavish we should be considered by eastern people could they see the loads that are put upon our flower gardens. But that is the secret of success in both flower and vegetable growing.

Degeneracy of the Peach.

PROF. J. L. BUDD, IOWA AGRICULTURAL COLLEGE.

I have read with care the paper of Prof. Hadwen in which he urges that the process of budding is accountable for the yellows and general degeneration of the Peach.

Permit me to express serious doubts in regard to his conclusions. The budding of select varieties of the Peach is as old in China and Central Asia—so far as we know—as the days of Confucius. Yet it is not known that the yellows, leaf curl, etc., are to be found in the natal home of the Peach.

Is it not more probable that our troubles with their fruit have come from its culture for long periods in climates not wholly congenial. That this had something to do with the development of the Potato rot is now quite generally conceded. At least we must admit that Chauncey Goodrich's seedlings from tubers imported from the home of the Potato in South America gave us varieties which have been nearly or quite free from the rot for forty years in both Europe and this continent.

I have reason to believe that the lost vitality of the Peach will in like manner be restored by infusing new blood from its original home. As yet their notion is purely theoretic with these exceptions: The Peaches from South China grown in the Southern States are yet sound so far as I know, and some varieties we have sent out for trial from North China and Central Asia have proven hardier in tree and fruit bud, better in foliage, and freer from fungus troubles than any of our old sorts. So far as I yet know they have in no case been attacked by the yellows, but some of them have exhibited the leaf curl. In the near future we hope to report their behavior in the "yellows" districts.

New Trouble with Fruit Trees.

The following from agricultural editor Clarkson, of the Iowa State Register, with reports, etc., below, and addressed to the Prairie Farmer, explain themselves. The matter will be found of much importance in Iowa and Illinois and very probably elsewhere.

DES MOINES, May 8th, 1888.

There is considerable alarm with some nurserymen in central Iowa, on account of a disease which is preying upon the roots of their nursery stock, such as Apple, Plum, Rose, etc. I send you by express fair samples of these fungi on the roots of Apple trees. I do not know what they are, or what is a cure for them, but have dubbed them "cancers." It first makes it appearance in small lumps not larger than a pin head, and immediately an abnormal growth of small, fibrous roots are thrown out, much finer and far more numerous than on a healthy plant. These roots appear to be an extra effort of nature to save the plant from the effects of the deadly enemy working at its roots.

One nurseryman called on me last week, and reported ninety per cent of his trees ruined. He says that after watching the progress of the disease for five years, and its effects, he finds that no tree ever recovers. At first there is an unusually vigorous growth, caused he thinks, by the action of a large number of the fibrous roots drawing extra nourishment to the tree. But the disease, like the deadly cancer in the human system, finally destroys the trees.

Some of our nurserymen refuse to sell their trees; others call the attention of the purchasers to the carbuncles, and sell at a reduced price if the purchaser will run his own risk.

—C. F. CLARKSON.

A copy of Mr. Clarkson's letter was sent to Prof. Burrill, who gave the subject such attention as he could, and requests further fresh specimens. He says he has known the disease upon Cherry trees and Roses, and had attempted two or three times to investigate the matter, and has gone far enough to ascertain from the literature on the subject that the cause is not known, and from the examinations, it is some obscure thing, probably a low vegetable parasite. When he receives further specimens he will continue the examinations, which of course require much time, and no promises can be made as to what the results will be. The following is

PROF. BURRILL'S REPORT.

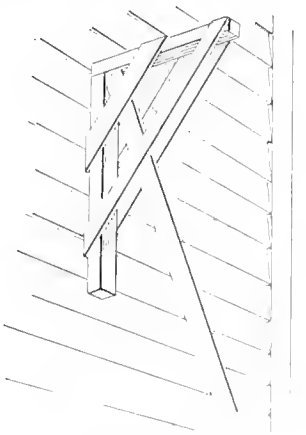
ILLINOIS UNIVERSITY, May 19, 1888.

The specimens of Apple roots received through you from Iowa, have upon them abnormal growths, which at first are like little warts with a rough surface. Afterward the irregular swelling enlarges as a hard, tuberculous knot, to the size of a hen's egg, or greater. The surface is rough, with protruding irregular points and ridges, as though the growing tissues were squeezed from within outward, and then hardened. Fibrous roots issue from the young swellings, but these seem to perish soon, as the older roots do not have them. After a while decay takes place, and the hard excrescence becomes a mass of crumbling, saw-dust like material.

These things have been made out in part from the specimens just received, and in part from previous observation upon what seems to be the same thing on Rose and Cherry trees. One slight examination had been made before on diseased roots of Apple trees.

Nothing is known of the cause. The entomologists are positive that it is not due to insects. There are no marks of insect work. I once found, on a similarly affected root of Cherry, great numbers of mites (minute spiders), but it was concluded these had no causual relation to the disease. The next supposition is that the malady is attributable to fungi; but then there is no clear evidence of this. There is indeed upon these specimens and others, a considerable growth of the mold-like filiments of some fungus, and swarms of bacteria have been found on and in these exterior cells of the old bark. But no one can say from this evidence that either of these causes the trouble. I cannot see any thing to suggest their action as the disease producers.

The enlarged, rough growth comes from the living cambium layer, and neither in this or near



An Improved Scaffold.

it, has any trace of the low vegetable parasites been found. Something stimulates the tender young cells to grow abnormally, but this something does not kill them. One is reminded of a gall, where the injurious agent is exceedingly small, compared with the wonderful departure from normal growth which takes place. The cells just beneath the cambium are irregular in shape, and have very thick, hard walls. Curiously enough, they are densely packed with starch grains, like the regular reservoirs (as tubers, etc.) possessed by many plants.

Here our information ends. I infer, from what has been seen, that if the cause is a fungus, it comes rather from the soil, than directly from a diseased plant to the healthy one. As experiments, I should try liberal dressing—stirred in the soil above the roots—of such substances as lime, land plaster, muriate of potash, common salt and wood ashes mixed. Careful observation ought to be made as to whether or not the disease is more prevalent on lands upon which diseased trees have been grown. Finally, carefully conducted, scientific investigations ought to be made, extending, if need be, through the year. Here is one line of work for the new Experiment Stations.

T. J. BURRILL.

An Improved Scaffold Support.

The subjoined cut represents a safe, convenient and easily made scaffold bracket which has come into wide use in Buffalo and elsewhere in recent years. The two main pieces which are spiked to each other at right angles, consist of 2x4 inch scantling. These are each as long as the scaffold is to be wide. Braces are then nailed obliquely across, two on each side as shown. These may consist of one inch stuff and should be three or four inches wide. To elevate the bracket, place the upper end of a scantling between the braces and under the horizontal part as shown, with the lower end resting on the ground. The bracket may be moved higher or lower at pleasure. It is only necessary to see that the foot of the scantling rests securely on the ground in order to have a perfectly safe support.

Management of the Orchard.

PRIZE ESSAY BY SOUTHERLAND, INGERSOLL, ONT.

The scientific knowledge necessary to rear and care for an orchard properly is not more than is required to raise a good crop of grain, or any other product of the farm, but the period of its growth extends over a far greater length of time, and the care which it receives is not apt to be so constant and timely as would be given to a crop occupying but one short season. So much of the success in after years depends on the manner in which it is first planted, that I will give a few directions for setting the orchard.

SITE. Select a site, if possible, sloping to the south, although perhaps the advantage of one slope over another, everything being taken into consideration, is very slight. On the whole, I think the nature of the soil should be considered as of more importance than the slope. Avoid a soil with a hard clay subsoil, for not even the best of cultivation and thorough drainage can render it fit for the reception of the far-reaching roots of the trees. A deep, dry, sandy loam should be selected to give the best results.

PLANTING. Having selected a site, the next thing will be to drain, manure and subsoil the land. The distance which trees should be planted apart will depend on the amount of land at your disposal, and the kind of trees to be planted, a spreading tree such as the Greening requires more room than one of close growth, such as the Northern Spy. However, as the farmer will want to plant more than one variety, it is best to adopt a distance which will meet the requirements of all kinds. If the trees are given plenty of room they will require less manure to sustain them in good condition. From thirty to forty feet is better than a shorter distance. Select trees of a medium size, set in large round holes, carefully spreading the small fibres and reserving the top soil to be pressed firmly around the roots. Next, stake and prune the trees, leaving about four of the main branches evenly balanced on the trunk of the tree.

FUTURE MANAGEMENT. This will consist in preserving a well shaped top, in clean cultivation, and in applying to the land, in the shape of manures, such elements of plant food as will at once increase and retain the fertility of the soil and supply to the trees the essentials for growth.

By careful going over the orchard once a year, and removing the objectionable

branches in the first stage of their growth, it will not be necessary to mutilate the tree when it has arrived at maturity by sawing off large limbs, and leaving large openings and half rotten stubs too often seen in the farmer's orchard. Of branches which cross one another, or have a tendency to grow too close together, the less vigorous should be cut off, taking care not to interfere with the natural spreading or upward tendency of the tree. In fact, the more we strive to conform to Nature's ways in the management of the orchard the greater the chance of success. As to the best time to trim we give the perference to the early spring.

But it is to the soil that the attention of the orchardist should be most assiduously directed. If the orchard is cropped, the object should be not to utilize all the fertility of the soil for fear it will be wasted, for the trees will need it all, and more to, but to keep the land clean, and for the purpose of working in the manure applied. For this purpose nothing is better than low, hoed crops. A judicious rotation, however, should be practiced, as crops of the same nature taken from the land year after year would be apt to exhaust it of some of the elements necessary to the healthy growth of the tree, unless some stimulating artificial manure is applied to supply the deficiency. Whatever system is adopted, however, the land should receive every year a liberal dressing of well rotted manure.

TREATING OLD TREES. Many present owners may find their orchards a mass of brush twenty-five or thirty years old, dead limbs, barkless trunks and scanty foliage; fruit, if any, is borne small, scrubby and wormy. In this case there are three methods of procedure, and which of the three to choose must depend upon the particular state of the orchard and the purpose for which fruit is required:

1. To cut down the trees, grub out the stumps and plant a new orchard. 2. To graft the trees with cions from a vigorous stock. 3. To trim the trees and adopt a system of renovation.

If the case is an extreme one, as the one mentioned above, the fruit of an inferior kind, or the conditions of soil or location are unfavorable, probably the best plan to adopt would be the cutting down plan. But if the trees are young and vigorous, but with fruit of an inferior kind, and good fruit is wanted for market, I would adopt the grafting plan. If, however, the natural conditions for fine fruit are favorable, but the orchard, through neglect of improper treatment, has fallen into a state of unprofitableness, I would then endeavor to make the most of it by adopting the third plan.

We will suppose the time of the year to be June, and the orchard in grass. First, remove all dead limbs, then scrape and wash the trees, then plow the land rather shallow and cultivate the surface at intervals during the season. Of manures it is doubtful if anything is better, if it can be had in sufficient quantities, than the refuse matter of the farm, such as decayed chips, yard scrapings, ashes, etc., not forgetting a good dressing of well rotted manure in the fall. The following summer cultivate some low hoed crops between the trees, after which seed down to grass to be used as a pasture for hogs, sheep, calves, etc. By pasturing the orchard the grass is kept short and the land kept in good condition by the droppings of the animals. The hogs especially are of great service in devouring the worms in the fallen fruit.—Farmer's Advocate.

ACIDS IN VEGETABLE PRODUCTS. The grateful acid of the Rhubarb stalk arises from the malic acid and bin oxalate of potash which it contains; the acidity of the Lemon, Orange, and other species of the genus Citrus is caused by the abundance of citric acid which their juice contains; that of the Cherry, Plum, Apple, and Pear, from the malic acid in their pulp; that of Gooseberries and Currants, black, red and white, from a mixture of malic and citric acid; that of the Grape from a mixture of malic and tartaric acids; that of the Mango from citric acid and a very fugitive essential oil; that of the Tamarind from a mixture of citric, malic and tartaric acids; the flavor of Asparagus from aspartic acid, found also in the root of the Marsh-mallow; and that from the Cucumber from a peculiar poisonous ingredient called fungin, which is found in all fungi, and is the cause of the Cucumber being offensive to some stomachs. It will be observed that Rhubarb is the only fruit which contains bin oxalate of potash in conjunction with an acid. It is this ingredient which renders this fruit so wholesome at the early commencement of the summer, and this is one of the wise provisions of Nature in supplying a blood purifier at a time when it is likely to be most needed. Beet root owes its nutrious quality to about 9 per cent. of sugar which it contains, and its flavor to a peculiar substance containing nitrogen mixed with pectic acid. The Horse-radish derives its flavor and blistering power from a volatile acrid oil. The Jerusalem Articoke contains 14½ per cent. of sugar and 3 per cent. of inulin (a variety of starch), besides gum, and a peculiar substance to which its flavor is owing; and lastly, Garlic, and the rest of the Onion family, derive their peculiar odor from a yellowish, volatile, acrid oil; but they are nutritions from containing nearly half their weight of gummy and glutinous substances not yet clearly defined.—Chemistry of the World.

THE FUCHSIA. Few pot flowers are better adapted for pot culture than the Fuchsia. Any one who follows these directions can hardly fail of success: First, fill the pots with good leaf-mold and sand. If leaf-mold cannot be obtained take the fibrous part of the sod from the bottoms of an old meadow and mix with sand. Fill the pots with drainage material (potsherd is best) to the depth of two inches and cover with a layer of moss; the excess of moisture will flow out and prevent the earth from becoming acid, as would be the case if the drainage material were wanting. To insure a thrifty growth the roots should have plenty of room, hence they should be kept in spacious pots. If kept in small pots they will bloom proportionally. The Fuchsia loves light, but should never be set in a window where the midday sun can shine upon them, and should be sprinkled with water every second day. This helps to keep the leaves clean and furnishes the plant the requisite amount of moisture. The idea seems to prevail that the Fuchsia is a winter bloomer. There are only a few varieties which bloom in the winter, but they are, as a rule, unreliable. Among those best suited for winter blooming I would name Speciosa, with blush-rose tube and sepals and reddish corolla. There are many varieties of summer bloomers, and new varieties are added every year. Summer and fall are the seasons in which the Fuchsia blooms most freely, and after which they should be placed in the cellar and left there until March, when they are to be brought out and half the wood removed and watered, and in a short time many new shoots will show, when they may be repotted. The Fuchsia may also be grown from seed, and thereby new varieties are obtained. Sow in March in shallow pots, simply pressing them into the soil. When of convenient size pot and as it becomes necessary shift until they are ready to bloom.—American Rural Home.

GREEN MANURING. There is reason to suppose that sufficient means are not adopted to utilize properly the refuse vegetable matter of the garden. Probably this arises from the mistaken notion widely spread among cultivators of the soil, that such matter is improved by fermentation. This refuse is scrupulously cleared off the ground, to be dug and consigned to the rubbish heap. Here the chief components of plant tissue are decomposed and dispersed in the air. If this organic matter was dug into the soil, its constituents would be retained by the absorbing influence of the soil, to supply the ensuing crop with its natural food supply. The process of fermentation leaves little save humus, which, strictly speaking, has no fertilizing properties, yet it acts an important part as a mechanical agent, by absorbing nitrogenous compounds from the atmosphere. The process of fermentation and combustion are, to all intents and purposes identical, and in each case the valuable parts escape in vapor and gases, so that the rubbish heap as generally managed furnishes the garden with little stimulating properties, and so with stale dung, from which by fermentation the great fertilizing principle it possessed has escaped into the air. It has, like the vegetable refuse, lost all its nitrogenous principles, and when dug into the soil, neecssarily acts the same part. It has yet to receive its fertilizing properties by absorption from the air. Green manuring has many advantages to recommend its use, in addition to ordinary manure. By throwing out a ton of refuse vegetation we rob the garden of an equal weight of more suitable manure than, perhaps, we are able to replace. We often hear of soils becoming exhausted, which if it lays fallow for a year or so regains its normal fertility. This is a fact which most agriculturists take advantage of. Atom after atom is gradually released as the slow and steady decomposing action goes on in the soil, in proportion to the growing crops' demand for nutrition. Its decomposition evolves carbonic acid, which acts an essential mechanical part by breaking the soil, whereby other constituents of plant life are unlocked. Where circumstances prevent immediate application of green crops, they should be mixed with lime and earth in the rubbish heap, to preserve their volatile principles.—D., in Gardening World.

Received at this Office.

CATALOGUES, ETC.—FIGURES INDICATE PAGES.

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Sargent M'f'g Co., N. Y. City, Reclining Chairs, 100.
I. N. Stone, Sioux City, Iowa, Nursery, 4.
Thomas S. Ware, Tottenham, Eng., Hardy Plants, Chrysanthemums, etc., 155.
B. S. Williams, London, Eng., Orchids, Tropical Plants, etc., 100.

MISCELLANEOUS.

Report (2 vols.) of the year 1887, with colored plates of Chinch Bug and Codlin Moth; from the U. S. Department of Agriculture, Washington, D. C. Cloth, each 712 pages. Fumigators adapted to gas treatment of trees for scale insects are also figured.

"The Jack Pine Plains," by R. C. Kedzie, Chemist, being Bulletin No. 37 Chemical department of the Experimental Station of Michigan, 8 pages.

Eighteenth Annual Report of the Entomological Society of Ontario for 1887, W. E. Saunders, Secretary, London, Ont., 82 pages.

Report of the Fruit Growers Association of Ontario, for 1887, L. Woolverton, Secretary, Grimesby, Ont., 177.

"Tent Caterpillars," by G. H. Perkins, Entomologist, being Bulletin No. 11, also Bulletins No. 6, 8 and 9, of the Vermont Experiment Station, 8 pages.

"Celery Culture Simplified," by A. C. Nellis, N. Y. City, 8 pages.

Transactions of the Illuois Horticultural Society, 1887. A. C. Hammond, Secretary, Warsaw, Ill. Cloth, 341 pages.

Seventeenth Annual Report of the Secretary of the Michigan Horticultural Society, together with a History of Michigan Horticulture. C. W. Garfield, Secretary, Grand Rapids, Mich. Cloth, 587 pages.

"Organization" by Selim H. Peabody, President, being Bulletin No. 1 of the Illinois Experiment Station. Wm. L. Pillsbury, Secretary, Champaign Ill., 13 pages.

"Fungoid Diseases of the Grape," by Prof. F. Lamson Scribner, in Bulletin No. 5 of the Section of Vegetable Pathology, of the U. S. Dept. of Agriculture, with directions for applying remedies, 113 pages.

Proceedings of the Millers National Convention, held at Buffalo, N. Y. June 12, 13 and 14, 1888, in special issue of the "Roller Mill," E. L. Bordick & Co., publishers, Buffalo, N. Y.

"The Wonderful Law," by H. L. Hastings, Editor of "The Christian" Boston, Mass. being No. 18 of the Anti-Infidel Library, 118 pages.

"The Central Pacific Railroad and its Relations to the Government," An argument by Creed Haymond, its general solicitor, before a committee of the U. S. Senate, Senator Frye, Chairman, 181 pages.

Fifth Biennial Report of the Kansas Agricultural College for 1885-6, Geo T. Fairchild Secretary, Manhattan, Kan., 179 pages.

Notes on the Twelfth International Exposition at Gand, France, with numerous engravings, by Chas. Joly, vice-president of the National Horticultural Society of France, 20 pages.

"Insect Pests and Destroying them," by Geo. D. Hulst, entomologist, being Bulletin No. 46, also No. 47, Fertilizers, of the N. J. Experiment Station, New Brunswick, N. J.

Fungicides, or remedies for Plant Diseases," by Prof. F. L. Scribner, Washington, D. C. being Circular No. 5, for the use of the Directors of Experiment Stations, in their treatment of fungus Diseases.

Eighth Annual Report of the N. J. Experiment Station for 1887, Geo. H. Cook, Director, New Brunswsck, N. J. 302 pages.

"Avoidance of Injury to Foliage, in the Gas Treatment of Trees," by F. W. Morse, in Bulletin No. 79 of the California Experiment Station, Berkely, Cal.

"Winter Wheat and Cotton Planting," by J. R. Dodge, Statistician, in Report No. 51, New Series of the U. S. Dept. of Agriculture, Washington, D. C., 50 pages.

"Treatment of Apple Orchards to prevent Insect Injury, Curculio Remedies and Chinch Bugs," by Clarence M. Weed, Entomologist, Ohio Experiment Station Bulletins No. 3 and 4 second series, 38 pages.

"A Treatise upon Wood Ashes as a Fertilizer," by Munroe, Judson & Stroup, Oswego, N. Y., 26 pages of practical matter sent free upon application.

"Analysis of Commercial Fertilizers," by Prof. C. A. Goessman, State Inspector, in a Bulletin of the Mass. Experiment Station, Amhert, Mass.

Prize List of the Toronto Electoral District Society's Flower Show, July, 18th and 19th, 1888. J. P. Edward, Secretary, 140 Wellington St., W. Toronto, Ont.

POPULAR GARDENING

AND FRUIT GROWING.

"ACOUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. III. SEPTEMBER, 1888. No. 12.

Feathery clouds are few and fair,
Thistle down is on the air,
Rippling sunshine on the lake,
Wild Grapes scent the sunny brake,
Wild bees murmuring take the ear,
Crickets make the silence dear;
Butterflies float in a dream,
Over all the swallows gleam.
Here and yonder, high and low,
Goldenrod and Sunflowers glow,
Here and there a Maple flushes,
Summer reddens, Woodbine blushes,
Purple Asters bloom and thrive—
I am glad to be alive!

—*Robert Kelly Weeks.*

IT IS THE well labeled exhibit that holds the attention of visitors to the fairs, and which instructs at the same time.

CANNAS FROM SEED. A group of these stately plants if properly located, makes a fine ornament to any dooryard, and by growing them from seed, any one can have a fine group in a couple of years.

A CABBAGE DISEASE that is affecting the crop along the Hudson River, N.Y., has a resemblance to Peach yellows. After growing well for a time the plant seems blighted and dies. The crop in that section is likely to be less than half the average because of this ailment.

BURNING TENT CATERPILLARS. Referring to the use of a kerosene soaked brick for destroying these worms as recommended by the Entomologist of the Department of Agriculture. Prof. Cook says: True we can thus kill nearly all the insects, but, at the same time, often the tree itself. I would advise the use of arsenites or other poisonous sprays instead.

PACKING PEARS. The French, who export more Pears than any other nation, cover the inside of the boxes with spongy paper or dry moss, which absorbs the moisture. Each Pear is then wrapped in soft paper and placed in layers in the bottom, filling all interstices with the dry moss. Thus they will keep a month or more. They are so packed that they cannot touch each other, and all motion is prevented. If one decays the others are not harmed.

ABOUT SOME TOMATOES. Seeing it stated that Acme, introduced by Mr. Livingstone, was the first smooth Tomato, it ought not to be forgotten that Hathaway's Excelsior was grown extensively all over the country long before the Acme, which probably got its smoothness and tendency to rot from it. The Boston Market is a still older, rounder, smoother sort; on this, Early Essex was an improvement, and is nearly identical with the Advance and Acme in a number of respects. It also seems to have come from healthier stock as it shows no disease where others do. The most remarkable development toward the future perfect Tomato is in the Early Dwarf Champion introduced this season. It has a very strong stocky stem branching close to the ground, and nearly self-supporting. The fruit is of good uniform size, smooth, and early. I think it will be found nearly the earliest. With this variety to start with, there is reason to believe that other Tomatoes superior to those now cultivated, may be produced.—*R. W. Hargadine.*

EXPERIMENTAL STRAWBERRY PLAT. "At Woodbanks" the setting out of all varieties of Strawberries of which pot plants could be procured is now being completed. These comprise over 45 varieties, including both old and new ones, down to the very latest as follows: Alpine Wood, Belle Bordelaise, Bidwell, Belmont, Bubach 5, Burt's Seedling, Bomba, Cobanzie, Champion, Crescent, Cumberland, Crimson Cluster, Cloud's Seedling, Downing, Duchess, Dutter's Seedling, Gandy, Gold, Golden Defiance, Hampden, Haverland, Henderson, Itasca, Ivanhoe, Jessie, Jersey Queen, Jewell, Louise, Logan, Long John, Miner's Prolific, Mount Vernon, Manchester, May King, Montreal, Monmouth, Ontario, Pearl, Parry, Prince of Berries, Pineapple, Royal Hautbois, Sharpless, Triomphe de Gand, Warfield, Wilson, A little later some other kinds, of which no potted plants could now be procured, will be added to the collection. This is but the beginning in the planting out of many kinds of fruit as well as ornamental growths at these grounds, for the purpose of placing at the command of our readers, the results of different methods of culture, and of the comparison of varieties both new and old, grown under like conditions.

THE SOCIETY OF AMERICAN FLORISTS. A report reaches us as the last form of the present issue is being closed, that the fourth annual convention of this society now being held in New York City is a very successful one. The attendance has been large and enthusiastic, and the papers read of a high order of merit. Some of the latter will appear in these columns later. According to the secretary's report the society now has the remarkable membership of 984, an increase of 200 in the last twelve months. Delegates were present at the meeting from all parts of the country, and as usual there was a good sprinkling of women among the members present. The convention was greatly pleased with Peter Henderson's report of the work of the committee appointed last year to secure a reduction in postal rates, as noticed in these columns last month. "We have got it down," said Mr. Henderson, "from 16 cents a pound to 8 cents for plants and cuttings." The reports of the committee on securing a reduction in the express companies' rates, and the duty on bulbs were not so pleasing. The following officers were elected for the ensuing year: President, Jno. N. May, Summit, N. J.; Vice President, W. J. Palmer, Buffalo; Secretary, W. J. Stewart, Boston, re-elected; Treasurer, M. A. Hunt, Terre Haute, Ind. The display of flowers, plants, florists goods, etc., was satisfactory, save for being crowded into rather close grounds.

Shade Trees by the Highway.

WM. H. YOEMANS, TOLLAND CO., CONN.

There is a saying that the roads of a country are an index to its civilization: however that may be, it may very well be said, that the appearance and general condition of the sides of highways are indications of the æsthetic culture of the people, or of their sense of appreciation of the beautiful.

Saying nothing about any efforts towards the improvement of the sides of roads, by refraining from making them a receptacle for the rubbish of the farm, and by cutting bushes, removing stones, etc., it is a wonder that there is such a laxity in the matter of setting shade trees. In traveling through the country there are cases noticed, where trees have been planted and become an ornament; but these cases are few and far between. With some there seems to be a hatred of shade under any circumstances: we have seen trees in pastures that afforded refreshing shade for animals, cut so that they would not spend their time in lying down when they should be feeding. In the severely warm weather of summer, man does not refuse to avail himself of the refreshing influence of shade; then why not provide it on the highways, when it can be done at so little trouble.

On the entire line of our road stands a row of shade trees, chiefly Rock Maple that were set by an ancestor when the writer was a boy, which now furnish a complete shade the entire distance. If as some claim they are an injury to the adjoining fields, hundreds of dollars would not secure the removal. Such cases as this are found in the desert but are not common.

If the objection is that there is expense without return, then let the sides of the road be beautified by setting fruit trees, from which an income may be derived; or set them to nut bearing trees, that will, after sufficient growth, give returns that will be valuable.

The attractions that present themselves to the eye, are what exert an influence in securing the adoption of residences by those who leave the cities and seek country life. There is never any loss in putting forth some effort to make a place appear pleasant and attractive.

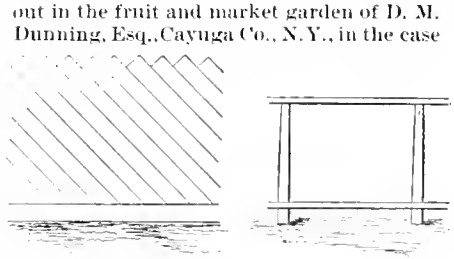
Ten Suggestions for the Kitchen Garden.

BY L. H. BAILEY, AGRICULTURAL COLLEGE, MICH.

1. Don't deprive yourself and family of fruits and vegetables.
2. Don't depend upon wild berries.
3. Don't depend upon the market.
4. Don't set aside your poorest land for the garden.
5. Don't plant in a restricted area which is closely fenced in.
6. Don't plant in little beds.
7. Don't plant in an old orchard.
8. Don't plant largely of anything which will demand great labor when farm or other work is most pressing.
9. Don't get plants or seeds from neighbors who are neglectful in culture, who grow indifferent products.
10. Don't put faith in novelties.

The Commonplace Made Ornamental.

To make the useful serve an ornamental end, should be the aim of every one who is fitting up grounds. Sometime since, we saw a capital illustration of this idea as carried out in the fruit and market garden of D. M. Dunning, Esq., Cayuga Co., N.Y., in the case



An Ornamental Board Fence.

of so common a thing as a fence made of rough lumber. It was the fence which surrounds this gentleman's large fruit and market grounds.

The boards used in the construction of the fence referred to were of a uniform width, perhaps measuring ten inches across, and these instead of being nailed up and down against rails after the present fashion in close board fences, were reclined at an angle of 45°, as shown to the left in our engraving. The result was a fence uniformly notched at the top, and with its lines running at variance with the numerous horizontal or

vertical lines of the garden thus serving to relieve the eye, very agreeably.

The frame of the fence is the simple one shown to the right in the cut. It will be seen that by employing boards just long enough to make two boards each by sawing through the middle at an angle of 45°, there can be no waste in fitting them to the base board of the fence.

The Apple Tree of the Future, for the North.

D. B. WIER, FORMERLY OF LACON, ILL.

The general failure of fruit trees during the past 20 years all over the west and northwest, has caused many expert horticulturists to study the situation, to see if there is any way in which a tree can be grown, so that it will stand our trying climate.

At the last annual meeting of the Illinois State Horticultural Society at Princeton, Ill., the subject was opened by Mr. J. B. Cotta, a nurseryman of long experience in the climate of northern Ill. Mr. Cotta had found the general cause of failure of orchard trees to be that of the trunks being killed on the south and southwest sides, by extremes of heat and cold in winter, and by great heat and drought in summer; therefore, if there are any varieties of the Apple, the trunks of which have never been thus injured, the hardier varieties can be top-grafted on them and we would gain our desired end. Mr. Cotta has been practicing this plan for several years, and had many specimens of trees so grown on exhibition.

His plan is to root-graft the variety having a hardy trunk, in the usual way, except in using a very long scion and a short piece of root, and then, after the young trees have grown two to four years, top-graft the variety on them three to five feet from the ground; growing them one year more when they are ready to plant in the orchard. For instance, the Duchess of Oldenburg, Whitney's No. 20, Roman Stem, Fourth of July, and also nearly all the variety of Central Russian origin, have never been known to be injured in their trunks. These varieties, then, are root-grafted, and the best of the nearly hardy varieties such as Domine, Ben Davis, Jonathan, etc., grafted on them. Figure 1 shows a tree ready for planting in the orchard. The hardy stem *A* was grafted when four feet high at *B*, forming what Mr. Cotta calls a safe tree for the West.

But this fruit tree has one weak point that his plan does not cover: namely, the forks, *C*, or where the branches join the body. All orchardists west have found that some varieties of Apple trees were injured in these forks, while the tops and bodies escaped; when this happened decay set in, and the trees broke down under the weight of fruit. The writer has seen certain varieties, so broken down,—though they seemed hardy enough in other points.

Now if we can secure Mr. Cotta's hardy trunk, and also improve the forks or junction of the branches with the stem that they will not be injured, we have a safe tree. Instead of working the tree with one graft or bud in the nursery, as Mr. Cotta does, grow the same kind of a tree in his way until it is two or three years old, then plant it in the orchard. Cultivate it thoroughly, and then, after one to three years growth, insert a bud or graft into each of the branches as at *B, B, B, B*, Figure 2, four to eight inches from their bases. We then have a tree with a safe trunk and safe forks.

Now if we go one step farther, we have the most perfect tree possible for every part of the country. It is this: For the stem *A* we will choose a variety that has proven perfectly hardy, in trunk and forks, everywhere, having the best possible foliage for withstanding insects and diseases. A tree vigorous grower, and if possible one that bears *little or no fruit*, and certainly never overbears; then instead of grafting all the branches we leave one, preferably on the north side, ungrafted, as shown at D, Fig. 2, for the direct purpose of giving vigor to the whole tree with its fine foliage, and for other reasons. It would be better for not bearing fruit, as its office is to sustain the other fruiting branches and to keep up the vigor of the whole tree. A Mr. Speer, of northern Iowa, said he had succeeded in getting crops of Apples in this way year after year, where all other plans have failed.

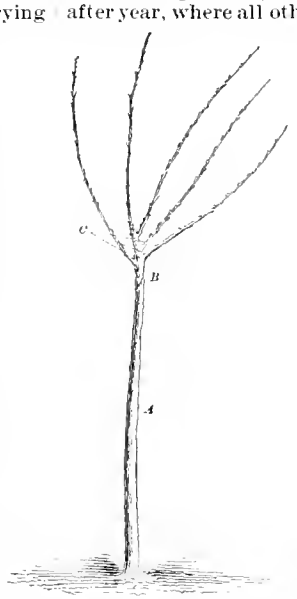


Fig. 1. Mr. Cotta's Plan, B being the point of Grafting.

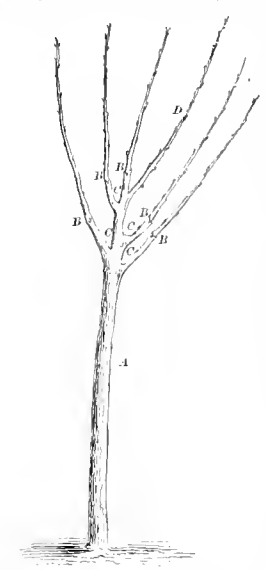


Fig. 2. An Improved Plan, the grafting done above crotches.

THE GROWING OF A HARDIER CLASS OF APPLE TREES.

The writer has had great experience in top-grafting in northern Illinois for over 40 years. The first orchard on the old homestead consisted of 1,600 seedling Apple trees planted in 1834. Many of these are yet standing, good, vigorous, productive trees. Many were entirely worthless for fruit, and these had their branches in the past grafted with fine varieties as they came into the then new country from the east. Some of these eastern varieties such as R. I. Greening, Roxbury Russett, Baldwin, Newtown Pippin, etc., usually very tender as trees, grafted into the branches of these hardy stocks have withstood everything they have met with, in the way of climate, and bear immensely.

By this plan and it only—I am fully convinced—can we have permanent orchards in the west and northwest, and I also believe it the best plan for every part of the country. There are many reasons why this is so, some of which I may give in future.

All Around Notes.

E. P. POWELL, ONEIDA CO., N. Y.

DANDELIONS. The value of Dandelions is not well understood. They are as useful for animals and fowls as for human beings. I have a flock of forty hens, and they are fed with less than a bushel of Dandelions with some admixture of grass each day. No matter what other green stuff is thrown in, they devour the Dandelions with the most avidity. This is a hint for those who do not know how to dispose of this plant that is making such rapid encroachments in some sections. The hens prefer the blossoms, but greedily devour the leaves.

EXPERIMENT AND STUDY FOR BOYS. The second story of my hen house is an extension of my carriage floor, and is a room 18 x 18 for my boys experimental and study room. This is neatly furnished and arranged for experiments in chemistry, for drawing, etc. They have a telephone and telegraph apparatus. The story still above is a room 36 feet long for workshop and play room. A carpenters bench and gymnastic apparatus are most prominent. Of course all tools are furnished them. My oldest, twelve years old, is a natural mechanic, and at fourteen or fifteen they will be furnished a teacher in the technical use of tools. For the present they learn what they can in their experiment room. A teacher of drawing and kindred studies meets them three days a week. A teacher of botany and zoology three days a week meets them on the lawns, or anywere they find it advantageous to study flowers and living creatures.

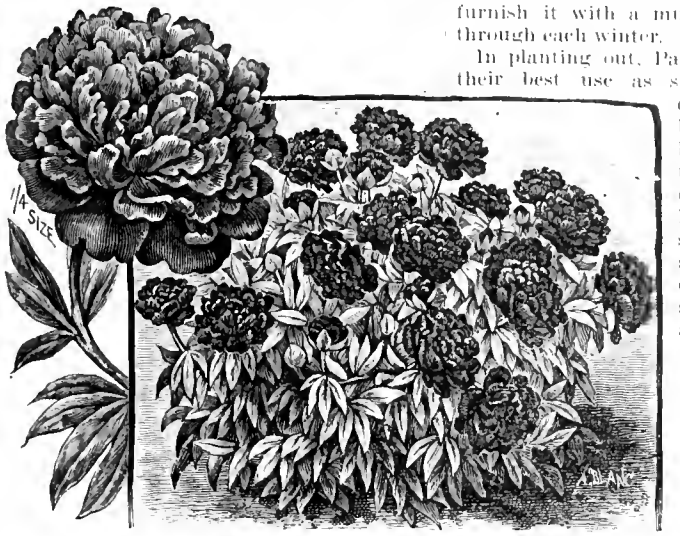
EDUCATING CHILDREN. I am radically opposed to the common system of education. My boys and girls till six or seven are only taught to observe and study nature. Herbert at five would scorn an insinuation that he could not detect a novelty in my hot-beds; or among fifty flower beds fail to distinguish and tell a good deal about each plant. They are allowed to pick up letters and figures. At six they begin drawing; elementary geology and geography follow. These are succeeded by the two branches of biology, that is zoology and botany. Of course my object is not to give you the program of study they pursue, but to show farmers and horticulturists that a little thought in this direction may be wise. Our children should know the world and themselves.

FLOWER LAWN. Now turn to the flower lawn. Every land owner should have one; not a few beds stuck about in the grass for his wife and daughters to get misery out of with a few flowers as part compensation. Find the neatest plot, the prettiest for shrubs and the nicest for seats and walks. Place a driveway around it, or hedge it in with evergreens; and devote it to shrubs and flowers. Cut beds and make them large; and do not begrudge manure of the best. Five or six beds will be enough to begin with; add more when needed. Send for Roses, Gladiolus, Geraniums, and plants easily cared for. In a warm nook, facing southeast, have a good cold-frame or hot-bed built, and then help your "folks" to keep the whole in prime order. A few rustic chairs and hammocks, and you can begin to have a home. Eating and raising things to eat constitute the life of too many farmers.

HOLLYHOCKS. I should like to introduce you to my beds of Hollyhocks, great masses of all colors. One bed is fitted with pure whites—about twenty-five plants; another holds crimsons. Then others are stately, with black, red, buff, yellow, crimson, and all intermediate shades. These plants are so easily grown, and the finest sorts of doubles—and singles also—are so very beautiful they should be grown in profusion. I know one farmer who has bordered his whole corn field with Hollyhocks. It is the grandest show imaginable. But his farm is neat and handsome all over.

LILIES FOR THE FARM. Another exceedingly fine flower for easy farm growth is the Lily. Go down to the meadows and dig a quantity of the wild Lilies and plant them about the house. If you grow Grapes put them under the trellises. Then get a few bulbs of Lilium candidum. They increase fast, grow as readily as Potatoes, and endure neglect. You will soon have enough to plant in masses and singly. The flower is very large, pure white, and very sweet.

TULIPS AND STRAWBERRIES. Now a hint to berry growers and I will stop rambling. Having immense quantities of Tulips, I thrust one down at the root of every Strawberry plant when I plant a new bed; and you ought to see my Strawberrygarden in spring. Long before the berries ripen it is a vast Tulip garden; hundreds waving all colors in the wind. They do no harm whatever to the Strawberries or plants. Try it. Nothing multiplies faster than Tulips you know, and fifty bought for two dollars will in a few years make a hundred.



HERBACEOUS PÆONY, PLANT AND FLOWER.

The Pæonies as Garden Plants.

Of a large collection of hardy ornamental plants, grown by the writer, the Pæonies stand forth as possessing more good qualities, commending them to wide culture, and less objectionable ones than any other plants that can now be called to mind. The flowers vie with the Rose in beauty of color and form, and with the Rhododendron in general attractiveness. The plants unlike many others of their class, continue handsome and neat in foliage and form from spring until fall, which fact allows of their being grown in conspicuous groups on the lawn with the best of effect. Then the qualities of perfect hardiness in all parts of our country, a vigorous habit and healthy growth, and a remarkable freedom from diseases and insects are points which must not be overlooked by those who are seeking embellishing material of the best kinds for lawn and garden.

As regards classification there are two quite distinct branches: namely, the Herbaceous Pæonies which, in some of the older varieties, are now common, and the Tree or Shrubby sorts. The Tree Pæony (*P. Moutan*) was introduced a hundred or so years ago from China and Japan.

The Herbaceous class is ranked into three divisions, The Old Double White or Chinese (*P. albiflora* formerly *edulis*) with its offspring, forming much the largest division, and coming from Tartary in Asia, nearly 350 years ago; the Old Double Red (*P. officinalis*), with its numerous varieties, and which is indigenous to Europe. In the latter class is also included the beautiful Fennel-leaved Pæony (*P. tenuifolia*), brought into notice in 1765 from Crimea. The third section *P. paradoxa* is the smallest and contains only a few varieties of a purplish red color. There are other species distinguished chiefly by botanical difference of no special interest to flower growers.

Pæonies are plants of very easy culture. They delight in a soil deeply dug and having plenty of well rotted manure worked into it—any plant that produces such luxuriant foliage and immense blooms requires liberal feeding. The one thing to be guarded against is water standing about the roots during winter. While both classes are termed hardy, still the tree kind is slightly less so than the other, hence it is well to furnish it with a mulch over the roots through each winter.

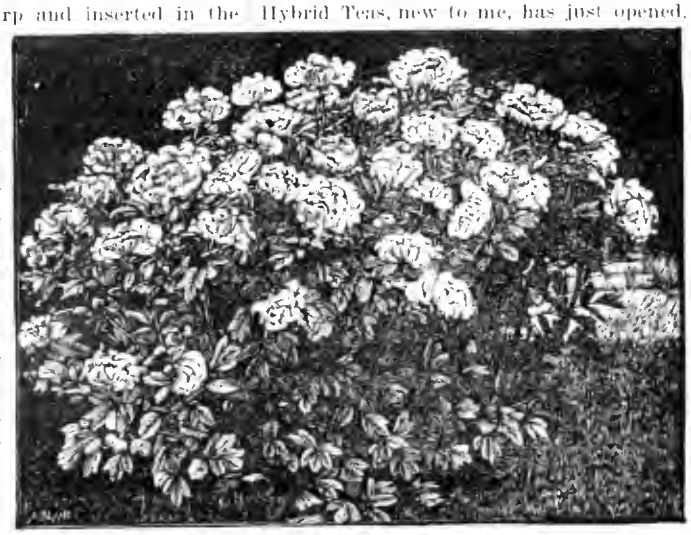
In planting out, Pæonies no doubt find their best use as single specimens or clumps of any number of plants, on the lawn. Under liberal treatment in the way of soil preparation here, nothing can well surpass them for strong ornamental effects. They are also suitable for planting along with other hardy plants in beds, while their use is strongly recommended by some for the wild garden, the large clusters of brilliant flowers springing out of a mass of deep green foliage, producing a fine effect.

The Herbaceous sorts are easily propagated by dividing the roots in the fall, or else very early in the spring. The Tree Pæony can also be increased by division, but the more general plan is to layer them or else to graft on roots of such common sorts as increase rapidly. For layering, the parent plants should be grown in a partially shaded and well sheltered place, where they need not be disturbed, as it usually requires at least two years before the new plants can be safely removed. On the branches used there are tongues formed by cutting lengthwise along the shoot very carefully, as the wood is easily broken; sandy soil is then placed about the stock plant in sufficient quantity to allow of the prepared parts being well imbedded therein.

The operation of grafting is not difficult to perform; in the spring, select strong single roots, plant them in rich soil, for getting a good growth by September, when a scion, three or four inches long, without a flower bud, is cut from the sort to be increased, made sharp and inserted in the crown of the root; earth being used to cover up the place of union. If carefully done this will unite with no further trouble. In the summer with half ripened wood, cuttings having a heel of old wood, can be rooted under a hand glass.

A use to which the Tree Pæony is sometimes put with satisfactory results, is that of growing in pots for winter blooming in the greenhouse; just before the ground freezes solidly, pot whatever number is desired and keep in a cool place; about six weeks before being wanted, bring into mild heat, and, after starting, water with manure two or three times a week. The soil cannot be made too rich for pot culture. After blooming they can be planted outside, but no flowers will be borne for several years after having been forced.

In the matter of varieties, our leading nurserymen now have long lists of the newer and improved sorts, some of which are remarkably fine. Of these there are by far too many to notice here. A small list might include the following: tenuifolia, festiva maxima, edulis, Humei, Louis Van Houtte, rubra triumphans, carnea striata and Victoria tricolor; of Tree Pæonies, Blanche Noisette, Roi des Cerises, extensa, Pride of Hong Kong and Zenobia.


A WELL DEVELOPED TREE PÆONY

Report on Some New Roses.

MRS. M. D. WELLCOME, YARMOUTH CO., MAINE.

Several of the new Roses added to my collection have bloomed. Mrs. John Laing, received by mail, made rapid growth, and developed two buds which grew to a very large size. The most forward one was long in unfolding and gave evidence that there was not sufficient strength in the plant to produce a perfect Rose. It opened however into a grand flower though I must say the outer petals of the bud were partly decayed. If my small plant could give such a large and beautiful flower, what must they be on strong well grown bushes?

This Rose, which is bright pink in color, received the gold medal at the National Rose Show, London, 1885, and was pronounced by the horticultural magazines, "the finest light-colored Rose ever shown in England." One of our own florists has testified that last year, plants only six inches high, set out in June, gave him a crop of show flowers every three weeks. I did not think it best to let the other bud bloom as the strength of the plant would center in that. It is perfectly hardy.

The new Tea Marie Lambert has grown wonderfully, putting out seven new and vigorous shoots with buds, and one has opened into a lovely white Rose, very fragrant. This is a seedling from Mme. Bravy, and worthy of all praise bestowed upon it.

Perle d' Or, added in June to my Polyantha collection is quite a novelty among them both in form and color. The buds just before opening, are of a rich apricot color, when in bloom change to salmon. The Rose is flat when fully open. It manifests the freeness of bloom so characteristic of this class. All of the Polyanthas are entirely hardy, and some are very fine.

Pierre Guillot, one of the finest of the Hybrid Teas, new to me, has just opened. It is a large and beautiful Rose, of a deep bright crimson shade.

Adrienne Christophle is not a new Rose, but I had never seen it until this season. It is so unique in its beauty, I want to speak a good word for it. It is a lovely shade of coppery yellow with a brilliant carmine center. The outer petals are cream color flushed with a delicate violet on the margin. Very beautiful and sweet.

Some Insect Notes.

BY CLARENCE M. WEED, OHIO AGR. EXPERIMENT STATION.

It took us just three hours to go over a half acre patch of Currants and Gooseberries this year with a Nixon barrel machine on runners, and spray the bushes thoroughly with hellebore. We used a pound to fifty gallons of water. A man, a boy, and a horse were needed for the work. It took two barrels of the liquid and hence two pounds of hellebore to go over the patch once. We sprayed twice, May 5th and 16th, and kept the Currant-worm thoroughly in check. This is as simple a matter as applying Paris green for Potato beetles, and works just as well.

I hear of many who use Paris green or London purple both for Currant-worms and Cabbage-worms. I believe its use in either case is inexcusable. Hellebore for the former, and pyrethrum for the latter are all sufficient, and are vastly safer than these mineral poisons.

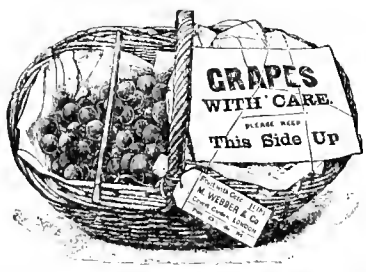
The punctured Grape-beetle is reported as doing damage in some parts of Ohio, eating the foliage and young fruit. Hand-picking just at dusk is the only remedy known.

At my suggestion, a correspondent in Northern Ohio sprayed his Grape-vines and Peach trees with a mixture of one peck of freshly slacked-lime to a barrel of water, to prevent the injury of Rose-bugs, and found the preventive a successful one. Soon after the treatment the bugs left the sprayed vines and trees and emigrated to those not treated.

The practice of spraying orchards with the arsenites is gaining ground in Ohio, and excellent results are secured. The application has killed the canker-worms very thoroughly in a number of large orchards with which I am acquainted.

How they Pack Market Grapes in Europe.

It may be well to look beyond our own country for a moment, and see how this important part of Grape growing is managed elsewhere. In so doing we cannot do better than glance at the European practices, referred to in "Barron's Vines and Vine Culture," from which we have taken the liberty to re-engrave the annexed illustrations: The



remarks refer, of course, to handling the species peculiar to Europe.

"When from two-thirds to one-half value is not infrequently lost by bad packing, it at once becomes evident that a cheap, simple, and expeditious method is of the first importance, as the prices realized, greatly depend upon the condition in which the fruit is received in market. Regular growers of Grapes for markets seldom make any mistakes of this sort, but deliver their fruit in good condition, packed in baskets specially adapted for this purpose.

Of Grape baskets used in Covent Garden Market, Fig. 1 represents a flat hamper, inside of which is a basket in which the Grapes are placed, this basket being generally used for displaying the Grapes in shop windows. The Grapes, when cut, are simply placed in this basket, stalk end upwards, a layer or two of tissue paper being placed over some soft dry Moss on the bottom; cotton wool is objected to as being too heating in warm weather and is not so elastic as Moss; when packed, this is then placed in the square, shallow hamper, as shown, and the lid closed down.

This mode of packing is used for transit by rail from places at a distance of about twenty miles, where the railway employees are accustomed to handling the goods.

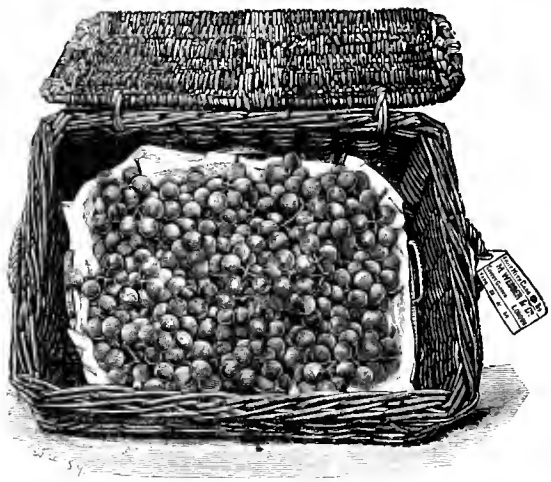


Fig. 1. Grape Packing in Europe.

Below is shown what is termed a 'handle basket,' recommended by Mr. Webber, an extensive shipper, as suitable for traveling from gardens where only the surplus stock is sold, and no regular supply is sent to the market. This basket is used for the transmission of all the Grapes from the Channel Islands; no packing is ever used beyond a sheet of paper; the handle is found useful to lift by, and it also serves as a guard, preventing any other packages from being placed upon the Grapes. In the Channel Islands service they are packed on the steamer in layers ten or twelve deep, hurdles being used to separate them from each other, and are generally received in excellent condition. They leave Guernsey by the steamer at about mid-day, being delivered in London the same evening in time for market the following morning."

Pear Blight and Grape Rot

SAMUEL MILLER, MONTGOMERY CO., MISSOURI.

In the above, we have perhaps the two worst evils in the whole category of troubles and diseases, combined, to contend with. Were it not for these, the growing of Pears and Grapes would be plain sailing; but as it is, the thing seems very precarious, and up to this time no one has discovered a safeguard against them.

For the past five years I have kept my Pear trees in sod, gave the ground salt and ashes, washed the trunks with whitewash containing sulphur. The latter was omitted the past spring, and whether its omission has anything to do with it or not, one thing is sure, I have had more blight within the last six weeks, than in the past five years put together.

The first tree that was attacked, was some Le Conte trees three years old on a Cucklin's Hybrid tree—a first cousin to Le Conte, and upon which buds there was no fruit. In most cases it only struck the young shoots, but in one instance back so far that I had to cut off some fruit with the blight. Another Le Conte grafted on common Pear blighted some also. This too, has fruit, so that we may get to know what the fruit is like when grown here.

White Doyenne, Hericart, Buerre Superfine, Vickers (not Vicar of Winkfield), Clapp's Favorite, Bartlett, Doyenne D'Ete, the latter the worst of all, Bloodgood, Seckel, Buerre Clairgeau, Kieffer, Cucklin, Chenilla, Sheldon, Lawrence and Duchess D'Angouleme are free from it.

All the above are here in rich soil, only about ten feet above the Missouri river bank, eastern slope, while an orchard of some fifty or sixty trees, including eleven Le Contes, three years planted on a north slope 150 feet elevation are entirely free, all as bright as a new pin.

It is not long that a blighted branch can be seen here, for the knife and saw are freely used as soon as noticed. One handsome Doyenne D'Ete, that had about a peck of fruit on it nearly fit to pick, now looks like the dog that had his tail cut off just behind his ears. Quite recently I saw an article advising to cut off the blighted part, and then cut through the bark down the limb for some distance.

My impression is that it is caused by electricity when the atmosphere is in a certain condition, and that there is no safe preventive in existence. My plan is to plant every year, if one tree dies outright I plant two, as I will have Pears if the thing is possible.

I, this season, picked five bushels of fine Bloodgood Pears from one tree planted about 12 years ago. Have a Clapp's Favorite that once blighted nearly to the ground, but which retained a sound shoot, that is now a fine tree, and has about two bushels of as fine fruit as one can wish to see.

The Vicker's Pear mentioned above is almost unknown, yet is to my taste about the best, equal to Seckel, and three times as large. While on this subject I will say that my Pears at the last thinning, when a little over half grown, are put away in a cool dry cellar, they will become eatable. Bartlett and Seckel in particular.

The Grape rot is about as vexed a question as the Pear blight, and it takes about the same kind of an atmosphere to cause them.

One peculiarity is that one variety will rot one year while another beside it is free. The next season the very reverse may be the case. This season, Garbea, the earliest Grape I have is clean and nice, while last year they nearly all rotted, while Marsala, that never rotted before has rotted this season.

That vines growing on trees are less liable to have their fruit rot is a general belief in which I myself formerly joined, but now know better. A vine of Cynthiana running on a Peach tree has rotted for three years now, while on the rest of the trellise they are free from it. I attribute the rot of Marsala to this cause also, as it is over shadowed somewhat by a Peach tree.

Elvira has rotted scarcely any. Dr. Wiley a splendid medium sized Grape of excellent quality is as clean as gold this season, as it always has been heretofore.

As to preventing rot, all the dusting and solutions I have tried, wont do any good unless done in time. Sacking even must be done early to be effective. All that I sacked in time are now sound, but being called away to court as a witness, just when the Grapes should have been put in, the evil got the start of me, and many that I put in are rotten in the sacks.

There is a certain stage of the Grapes' growth when it is liable to be attacked, and that I believe to be as soon as they are the size of small sized Peas with the larger Grapes, and at half that size for small ones.

When I did the last sacking the Triumphs were about the size mentioned, and there is not a rotten berry in any of the sacks, and they are in splendid condition.

I can show clusters here where the sack is torn at the top and the berries exposed are rotten, while inside the bunch is sound.

In other instances the upper part of a bunch is safe in the sack, clean and sound, while the lower part of it exposed is all rotten. One bunch in a sack is sound while one on each side exposed are both rotten.

That sacking will pay for the finer Grapes there is no doubt, and serves not only to guard against the rot, but to protect them from birds and insects; a half-dozen cat-birds and a few broods of orchard birds can demoralize a whole acre of Grapes. Then, when a colony of thirty stands of bees are within one hundred yards of the vineyard the sacks will be needed. Last season the bees, following up the birds, hornets, yellow jackets and wasps, used up a couple hundred pounds of Martha Grapes in two days. The bees cannot cut open the skin of a Grape; but when it is cut they know how to get the sweet juice. The only return I had from my Marthas was honey for the table most of the year. Grow the large bunched kinds, thin out well, and it will take fewer sacks, less time to put up a given weight of Grapes and secure them against depredators.

If it were not for the rot, I might have shown nearly one hundred varieties of Grapes this season; as it is there will not be half a dozen varieties fit for show.

As the crop in these parts will be slim in many vineyards, so that it will not be worth the while to make wine, the juice can be pressed out, boiled until clear, then bottled and sealed while hot, and you have a delicious drink the following summer. It will be too heavy alone, but diluted one-half with ice water is just the thing. This will be better than fermented wine for many people.

Grapes: A Market Record of 1887.

A careful computation from reliable data and by a thoroughly competent person, says the Vineyardist, shows that the average market prices in the three largest cities in the union, last year, (1887), were on Lake Keuka Grapes, as follows—the dates ranging from September 1st to January 1st, and the number of days for New York being 38, and for Boston 35, and for Philadelphia 31, all taken by chance;

Cities.	*Delaware.*	*Concord.*	*Catawba.*
New York ..5,	7—19 cts.	4, 8—31 cts.	5, 1—7 cts.
Philadelphia.5,	6—19 "	4, 8—31 "	4, 3—7 "
Boston 5,	11—19 "	4, 17—31 "	5, 2—7 "

It will be noted that the Delaware commanded an average of about one cent a pound more than the Concord, which clearly shows the latter to have been the most profitable, as its price is four-fifths that of the Delaware, and its bearing capacity is at least two-fifths more. The Catawba, not as heavy a bearer as the Concord, and cannot be grown over nearly as wide a range of territory, sold nearly as low as Concord.

The foregoing figures show that sweet Grapes, like the Delaware, which are not as acid in taste as either Concord or Catawba, are preferred for table Grapes, even though, they are in many cases put upon the market before they are fully ripe; the Catawbas were, in all probability, not as ripe and sweet as they should have been, as they were hurried from the vines, before the middle of October, to escape a freeze.

It is hoped that growers will, profiting by the experience of the past, put no Delawares on the markets until they are really ripe, and then they will be in constant and large demand, maintaining good figures, and not demoralizing, but solidifying the markets, for what are to come after. Let this rule be followed in regard to all other varieties, especially the Catawba, or the prospects of the Catawba crop will be greatly injured. The first Grapes that went into the city markets should have been held a week longer on the vines, as they had the effect to "sour the market" and depress prices from September to January.

There are good reasons to believe that a different policy this year will give us a better season record than that of 1887, as detailed above; on that policy the future success of Grape growing in Central and Western New York, very materially depends.

Tomato Culture. In Answer to No. 870.

MANSFIELD MILTON, MAHONING CO., OHIO.

I do not know of an easier or a more reliable vegetable to grow than the Tomato. All it requires is a sufficiently high temperature, moderately rich soil and clean culture during the growing season.

For the market gardener to make money out of the Tomato it is necessary to have them in the market early. And in order to get the plants in bearing, say by the first of July in this latitude, they must have the best of care from the time the seed is sown until the fruit matures. Having been fairly successful in the culture of early Tomatoes, and growing them for the money returns they bring me, I give in detail the methods I have adopted to attain the best results:

The first week in March, I sow the seed in flats in a greenhouse where the temperature at night seldom gets below 60. For soil I use a mixture of sand and leaf-mold, or sand, and thoroughly rotted barnyard manure. I find that all kinds of vegetable and flower seeds vegetate much sooner, start with stronger growth, and are much better transplanted when started in this kind of soil than when it has a more retentive nature; besides less "damping off" of the plants in the sandy soil. As soon as the seedlings have two leaves they are transplanted into flats, using soil composed of manure, loam and sufficient sand to give it porosity. In this they make a rapid growth, when placed in a hot-bed, which is the best place for them, securing stocky plants by giving plenty of ventilation in favorable weather. Spindling, weakly grown plants being of no account whatever for the early production of fruit; it is therefore imperative to have paying results that the plants be kept bushy and sturdy of growth. When the plants begin to crowd each other in the flats or boxes, they are again transplanted either into a hot-bed 6 inches apart each way, or, what is better, put into 5-inch pots, except that when grown in pots they require more attention in watering than when planted right into the hot-bed; but pot grown plants are planted out with much less root mutilation, than when lifted from the hot-bed. The main requirement in growing plants for early fruit is to maintain an unchecked growth after the seeds have sprouted until they are set out in the open ground. Before setting out, where they are to fruit, it is necessary that the plants be well hardened off by judicious exposure to the air, so that the planting out does not check their growth or cause the flowers and small fruit—which ought invariably to be upon plants so grown—to drop off, thus requiring them to make a fresh growth before a crop of flowers and fruit can be secured. Moderately rich soil is best for a heavy crop; if too rich, an over abundance of vine is the result, with fruit ripening late or possibly none at all. The earliest and the somewhat late Tomatoes are generally the most profitable, as the latter are needed for canning, catsup, etc. The seed for the later crop is sown about the middle of April and kept growing as cool as possible until set out four feet apart each way for all except the Champion, which from its compact habit requires but three feet of space.

Until this season I have grown Acme for early, with Favorite for the general crop; but find by this season's trial that Champion is ahead of the Acme from ten days to two weeks, producing fruit of medium size, perfectly smooth, of firm texture. Three years ago W. J. Green, of the Ohio Experimental Station, sent me for trial 19 different varieties and strains of Tomatoes, and out of them I chose the Acme and Favorite as the best, but had I this season grown all Champions I would have been several hundreds of dollars ahead at this date; but I am always diffident about growing largely of any variety newly put on the market, be it ever so much praised. I, like every other experimenter in new things, have been so often humbugged that I deem it the best way to try in small quantities at first.

Tomatoes are seldom attacked with insects. Plants grown in a dry atmosphere are liable to be more or less injured with red spider. Potato bugs also are sometimes injurious, eating fruit and foliage. Hand picking is the only safe remedy. There is a large green caterpillar that often destroys the foliage of several plants in a short time. Careful searching for them should be kept up until they are all found and destroyed. Their excrement under and around the plants is a sure indication of their presence.

One word about marketing Tomatoes. Few market gardeners realize the importance of sorting out the ill-shapen and half ripened fruit. Also the cleaning off of any dirt, which may have got upon the fruit lying on the ground or dashed on by heavy rains. A basket of well-sorted fruit, clean and nicely arranged, with the stem side down, will always command a better price than where it is put into baskets just as picked, independent of dirt or general appearance.

How to Sulphur Fruit.

Concerning the best methods for drying fruit by the sulphuring process, the following information, said by the California Fruit Grower to have been derived from successful experience, is of interest.

The sulphuring box or closet must be tight jointed all around, with the door well battened at sides, top and bottom, the only opening being a vent hole about six inches in diameter in center of the roof. Without the vent there is no current of air, and consequently no even distribution of the sulphur fumes. A slide to regulate the draft should be set in the vent hole. The width and depth of the sulphuring box should be adapted to the size of the trays in use in the drying field. For height, eight feet is as great as can be worked conveniently.

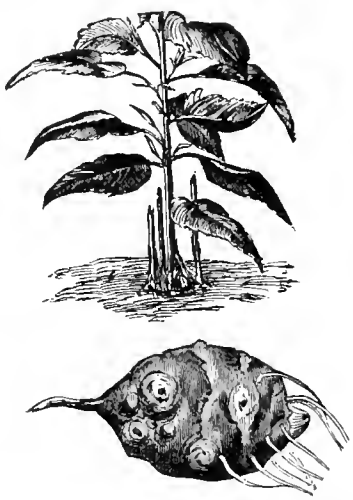
Burn the sulphur outside the box in a charcoal stove, such as is used for heating flat-irons, covering the top of the stove with a sheet iron hood tapering to about four inches in diameter, where a pipe of four feet length can be slipped on and off. This pipe should lead into the bottom of the sulphur box at the centre, where the fumes will be delivered at proper temperature to save scorching the lower trays of fruit. The hood should have a door to take the sulphur pan in and out. To ensure a good draft from the stove through the sulphur box, the stove should be set below the level of the box, and if the pipe trends upward the draft will be increased proportionally.

For sulphuring, the fruit contained in a box 8 feet high by $3\frac{1}{2}$ feet square, two heaping tablespoonsful of powdered sulphur sprinkled upon a live coal and burned on a pan set in the stove, with lower draft open and hood door closed, is sufficient. Good results have been obtained from burning a mixture of two-thirds powdered sulphur, and one-third powdered charcoal. From twenty to thirty minutes is as long as fruit should remain exposed to the sulphur fumes to avoid deposit of metallic sulphur, and yet produce bleaching effect. Practice will train the eye to this, keeping in mind that

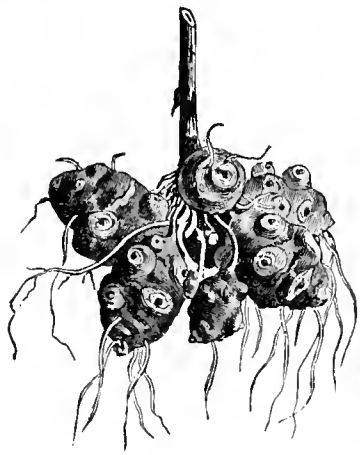
the greener the fruit, the longer the exposure that is necessary.

Where large drying operations are in progress, a row of three sulphuring boxes can be served from one stove, operating them successively and having pipes made with sheet iron caps to cut off the communication with all but the one box which is being sulphured. Caps are better than dampers, as they entirely cut off the connections, although involving the slight trouble of unjointing the pipe to put the caps on.

Sulphuring preserves for a long time the bright, rich color of Apricots and Peaches, and the whiteness of Apples and Pears, and when practiced as above described, not only imparts no bad flavor to the fruit, but actually enhances it by preventing fermentation; on the other hand, over-sulphured fruit, however beautiful, retains the sulphur taste to an offensive degree, proportioned to the extent of the over-sulphuring.



THE JERUSALEM ARTICHOKE, TOP AND TUBERS.



THE TRUE ARTICHOKE, *Cynara scolymus*.

Something About the Artichokes.

In the list of useful vegetables, we find two entirely distinct plants bearing the common name of Artichoke. One of these, the true Artichoke, is known botanically as *Cynara scolymus*, the other is called the Jerusalem Artichoke and botanically *Helianthus tuberosus*. This latter is a tuberous Sunflower that is both cultivated and found growing wild in many parts of our country. It is a native of this hemisphere, but whether of the northern or southern continent is not certainly known. Carried across the ocean in the 17th century, it was received abroad with considerable favor, even greatly exceeding, at first, the Potato in that respect. The improved red and yellow varieties originated in France.

The Artichoke proper is wholly distinct from the plant last referred to. In the illustrations given on this page the right-hand one shows the former kind. The food portion is the leaves, the scales of the flower head and the more tender part of the stalk. This vegetable has not come as widely into use in this country as its merits deserve. In France it is much cultivated, and is highly esteemed as a table vegetable, being used chiefly in a raw state.

As regards cultivation, first let us note that the true Artichoke is a perennial, entirely hardy south of Washington, but requiring protection in the winter further north. A stock can be obtained from seed sown in an early hot-bed and planted out about May 1st, at two feet, in rows three or four feet apart. But a partial crop is had the first season, but thereafter the bed will bear as long as desired, though four years is considered the proper period.

Before covering the plants for winter, cut the old flower stems off close to the root, and then, when uncovered in the spring, a clump of young shoots soon furnish stock for further planting. All but two or three of these must be taken off, and on those wanted for planting a small "heel" of the old plant is to be left on, if too much be taken away decay in the mother plant is induced. This "heel" before planting is freed from all bruises, and the leaves are shortened, then the treatment is the same as for seedlings; a deep, rich, moist soil that is well drained is to be preferred.

Artichoke Salad or Chard is gotten by tying the side branches rather loosely together, something like Endive, until blanched.

In the left-hand engravings on this page is shown the Jerusalem Artichoke, tubers and foliage. This forms a cheap and not undesirable article of food for table use, while it is especially suited to live stock: a plot devoted to it year after year will produce nourishing food aside from its manurial value. Fowls and swine are especially fond of this food. It is unnecessary to dig the tubers for the latter if they can have access to the patch where they are growing.

The tubers, cut to one eye, are planted in April, eighteen inches in rows three and a half feet apart, on land suitable for Corn, the only fertilizer that it seems to require being potash; but little cultivation can be given because of their rank top growth. They can be dug in October or left in the ground until March, or digging as the weather permits during winter. The yield per acre is anywhere from three hundred to a thousand bushels, and where a plot is set apart for them they will usually come up each year, thick enough for a crop, after the first planting, but are easily cleaned off with one year's cultivating or pasturing. The yellow variety is probably the best for garden culture, though not productive enough for field purposes.

Regarding the table value of this tuber in various forms Mr. Wm. Falconer writes as follows: "I grow them every year. When nicely cooked, they are not only palatable but really good; but the fact remains that the "fixings" have a great deal to do with making them appetizing. Boiled, with white sauce, they are good; baked with beef they are better; boiled and mashed, nice and tasty; soup isn't bad; fried in eggs and bread crumbs, they are better and more to my liking than any other way. Baked and boiled in their jackets they are wretched—a mucilaginous paste."

Simple Mushroom Growing.

It probably is often the case that Mushrooms are not grown where they otherwise would be, if the idea was not prevalent that much preparation, and difficult conditions are required. While it is true that certain essentials do require to be complied with, yet there are many items in their culture as to which the manner of their being supplied makes no material difference.

On the next page is shown a method for the outdoor growing of this vegetable which is well adapted to the warmer parts of the country at any time of the year, and for the colder portions any time after hot-beds are started. The beds of any size desired, are simply formed by enclosing a space with boards securely fastened together for the sides and ends, high enough to permit of the material being placed within, allowing for an air space; the top boards can be nailed together so as to form shutters of convenient length for handling. During the severest weather the bed may be banked all around with manure, then covering the whole with straw. As the weather moderates, straw alone is sufficient.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

PEAR BLIGHT. I notice several articles in the May number about this disease. Ten years ago I had a nice little orchard of Pear trees that had just come into bearing. The blight came upon them and I lost nearly every one. I was so discouraged that I concluded that I would not try to grow any more. Two years afterward a nurseryman came around with the blight proof Sand Pear—I bought a few. The next year came an agent for the Le Conte, never known to blight; I bought several dozen. Since then I have bought some two dozen Kieffers. Last year the Sand Pear blighted and died. This year nearly all the Le Conte have blighted and are dying. The Kieffer so far has shown no sign of disease. Ten years ago I contended the blight was an insect that pierced the tender twig in the bud, others thought differently. This year I the more firmly believe that an insect of some kind is the cause that pinches or stings the tender twig in the head. This poisons the sap by setting up a kind of ferment that in its backward flow blackens and kills the tender growth, as well as the older wood; the bark cracks, showing that a kind of fermentation has been generated. As this poison in its downward course reaches the larger limbs it seems to travel in currents, as is shown not only from the bark of the limbs, but from the vigorous effort of the tree to make fresh growth throughout the top during the struggle; the tree not entirely succumbing until the body and roots have become largely involved.—*J. D. Buss, M. D., Camp Co., Tex.*

ABOUT SEEDS. Peter Henderson's foot culture of seeds means, of course, that all seeds should be firmed into the soil. This is a law of germination known to good culturists, and we owe Mr. Henderson thanks for insisting on it. I have always found common farm hands negligent in transplanting on this point. A plant should have as hard pressure into the soil as the two hands can give, and then a spread of loose soil on top as mulch. The loose top soil is also quite as

important as sowing seed. I would tread in, and then have the surface raked over lightly, just enough to loosen it on the top.

WORMS EATING PANSIES (page 242). One day I found my plants badly eaten, and looked them over but found no cause; still the plants grew more eaten every day; and I finally made another and more thorough examination, and found the plants just alive near the roots with worms that resembled those that infest the Currants. I held the plants up and sprinkled them with white hellebore mixed in water (one teaspoonful to a pail of water). Two applications cleared out every worm.—*J. B. Waite, Mass.*

THE LOUISE BONNE PEAR. The value of this Pear is enhanced by its keeping quality. It is also better not to pick it too early. Of course the heat during ripening season makes a vast difference. The Louise is an enormous bearer as a dwarf; but the quality is not any better than on standard. The standards take a fine shape, and is a rich, fine looking tree. It is a Pear that will bear high culture.

SAMUEL MILLER'S notes are always valuable, because he is always experimenting. On the whole what pleasure is there in horticulture if we do not undertake to create? As to wild Goose Plum, mine also never bore for fifteen years and I cut them out. Either Mr. Miller has another sort, or his are fertilized from a distance. This latter supposition is not impossible as cases have been known of fertilization from a distance of a mile or more.—*E. P. Powell, Oneida Co., N. Y.*

MOVING PLANTS. In directions for this work it is directed to give soaking waterings for three or four days. It is possible to overdo this by keeping the soil so wet that it is nearly impervious to air, thus suffocating the plants; also in very hot weather steam may arise and do injury.

PISTILLATE STRAWBERRIES. There is a great difference in the blossoms of Strawberries in different years and under different circumstances, and such varieties as Crescent will sometimes develop small stamens with pollen enough to effect fertilization, and produce a good crop when no other variety is near; and this offers a much more rational and satisfactory explanation of Samuel Miller's case of the Mary Stuarts than to suppose that one fertilization lasts for several years and extends to the runners even, as he suggests. As for the latter hypothesis, it would only be necessary to have the first field of any pistillate variety fertilized, and it should take care of itself afterwards.

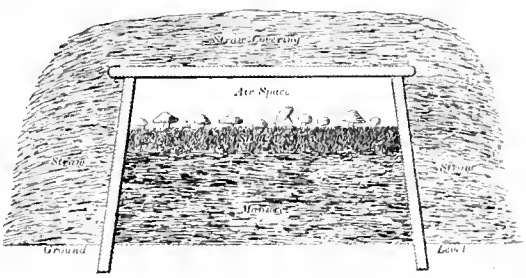
THE RED-HEADED WOODPECKER. We have the white, the speckled and the partridge woodpecker or wickiper all having red heads, and I am not certain but there are others. I have never seen enough of the first two to make much impression upon a fruit crop, and, so far as I have observed their habits, neither of the three can be called a fruit-eating bird, and I consider them very useful as insect destroyers.

SEEDS GOOD AND OTHERWISE. Your correspondant's rule to buy seeds of those who raise them is perhaps a good one, but the difficulty is that no one firm raises all its seed, and they are liable to imposition from those who raise them. Sometimes from ignorance and sometimes from cupidity, proper care is not taken to prevent mixture. A few years ago I visited a flower seed farm, the owner of which raised seeds for one of the most reliable houses in the trade, and among other things I saw a lot of Balsams intended to be offered as first-class double, yet all the single flowers had been allowed to grow with the others; and to my suggestion that these should have been removed as soon as their character was developed, the owner replied that they would be taken out before seed was collected. In another instance a grower of Watermelon seed applied manure which contained Citron seed, and all were allowed to grow up together with the same idea as in case of the Balsams, that all that was necessary was to save seed only from the ones wanted. These were not cases of intentional wrong, but resulted from gross ignorance. Another case, however, certainly verged a little upon dishonesty. A seedsman who had four seed farms some distance out, rented them with the agreement that the tenant should raise for him four varieties each of Beans and Turnip seed, each variety to be grown on a different farm. The seedsman visited these farms one season and saw that everything was apparently all right; but the next year finding it to suit his arrangements of other crops better, the tenant planted all the seed crop on one farm in close contingence to each other; and the seedsman, having little time to spare and thinking the business was arranged so it would be all right, did not visit these farms, and the result, of course, was that his customers got mixed seeds. And these are only fair samples of what is going on somewhere every year. My practice in buying is to select a house where appearances indicate the best knowledge of the business, and where proprietors appear most like honest men; and when one finds good seeds it is poor policy to change simply for the purpose of buying cheaper.

PEACH YELLOWS. A Delaware nurseryman who publishes a horticultural periodical, claims that there is no such contagious disease as yellows, and that a large portion of what is called yellows is due to starvation, from which I infer that the genuine disease has not come under his observation, for where it really shows itself, its character is so marked that it is hardly possible to mistake it. And from the appearances of the Peaches on sale in Philadelphia in the early part of August I am inclined to the opinion that our great Peach growing district in the Middle States will not long contain many unbelievers. A large portion of this fruit showed the dark color extending largely through the flesh; which is characteristic of this disease and a Peach grower whose business takes him to Philadelphia every day, estimated that fully nine-tenths of the fruit then offered was prematurely ripened and it is likely to very soon become the important question whether the real yellows is curable.

MULCHING TREES. This is undoubtedly a great advantage if properly managed, but a heavy mulch tends to bring the roots to the surface, and I think it better to keep clean and well cultivated through the cool and wet portion of the year, and put the mulch on just in time to save from hot and dry weather; this to be removed when cool weather comes.

BLACK KNOT ON PLUMS. The advice to cut in spring is hardly safe. New ones are formed during summer and winter, crack and emit the spores which are in effect seeds; the knots should be cut off and burned in fall or early winter or better still before they become black during summer or early fall.



SIMPLE MUSHROOM GROWING. (See opposite page.)

PANSY CULTURE. This is quite a different affair in southern New Jersey from what it is in Massachusetts. Here two inches of moss is none too much for a mulch and if we wish to grow them in summer, shade is indispensable and it can hardly be too dense.

BEAN AND PEA WEEVILS. In our northern States the Pea weevil is easily avoided by planting Peas intended for seed, in June, but here we can rarely succeed in late planting and seed should be brought from the north. The habits of the Pea weevil are somewhat different, and late planting does not give immunity, and I do not think that a combined effort would starve them out, for there is a weevil that attacks several wild plants, as the wild Bean (*Tephrosia Virginica*) of our swamps and brook-sides, and also the wild Lupin, which I think is the same as the one found in our cultivated Beans. Something may be done, however, in keeping the Beans—if kept in a warm place the weevil eats its way out before planting time in spring, but if they are exposed to the winter temperature in an out building, they will lie in a dormant condition or rather not hatch out till later, and if kept in cold storage they would not likely injure the Bean at all. I have also kept seed Beans in glass cans with a little benzine among them, and a piece of oiled paper tied over.

VARIETIES RUNNING OUT. Of course there can be no question that trees and plants like animals have a limit to their term of life, and although in the case of some trees this is a very long one, they must eventually grow old and die. There are obvious reasons for this which it is not necessary to review, but when we attempt to apply the same rule to *varieties* the case presents entirely different conditions. Nature has arranged different methods for the multiplication of different trees and plants. Some increase by seeds, some by runners, others, like some of the Rubus family and the Yellow Locust, by suckers, and others again like the American Yew, slowly spread by layers. Some plants combine several of these methods, while others are almost exclusively confined to one. Now I do not anticipate that it will be claimed that those which come from seed will run out so long as the same outward circumstances continue. It may be said that a new plant produced by a runner is essentially a portion of the original and retains its characteristics fully, while plants produced from seed are strictly new existences, and do not retain the characteristics of the parent. In case of the common Yellow Locust, however, the seedlings do retain the same type as fully as the Suckers, and I fail to see that there is much closer connection between a Strawberry plant, produced at the end of a slender runner, and its parent plant, than between a plant and its seedlings; the runners from these are still farther removed, and the vigor of all these plants is dependent on the conditions around them. These remarks apply with equal force to plants and trees from cuttings and grafts. Much more of similar import might be said, but this is sufficient to draw attention to these points. To refer again to outward circumstances which I think should be exclusively credited with the running out of varieties just as the running out of species would be, take the Wilson Strawberry as one the most familiar examples: It originated in a climate which is comparatively cool and moist, and at the time berries were not so extensively raised, prices were higher and the present plan of planting immense fields of poor land, which is often done now, had not been practiced; this transfer to hot and dry climates and starved condition is one cause of running out. Another cause, and I think the prominent one, is the Strawberry rust. I am not quite certain that this had made its appearance at all, though I think not; however that may be, it had not become general. We have plenty of evidence that this variety is still grown in many places with all its primitive vigor, and even here in our sandy soil and hot summer sun I saw a large field of it looking as finely and bearing as full crops as ever, and why might not the term "run out" be applied with equal truth to new varieties which fail within a year after their introduction. Notwithstanding, I do not consider the Wilson run out, and believe it can be made to succeed fully when the surroundings are all right. I heartily assent to the desirability of raising new varieties, because I consider it possible that we may get all the valuable points of any one we now have with improvements in other respects, and perhaps much greater power to resist rust and other diseases.—*Wm. F. Bassett, Atlantic Co., N. J.*

SEVERAL SORTS OF WILD GOOSE PLUM. Soon after the introduction of the Wild Goose, when nurserymen were sending samples to the Gardeners Monthly, in acknowledging them, the editor remarked that no two samples were alike. My Wild Goose were received from Delaware, and for some years I considered them very poor bearers, but after they acquired a size of three or four inches in diameter they did better, and have gradually increased the crop every year since; it is possible that it is age that is required instead of other varieties.

SPECIALIZING. That is good advice Mr. Purdy gives in the sentence, "Don't spread over too much ground," and its application is by no means to be restricted to the soil tiller. I know a number of bright young men who will never make as much of themselves as they might, simply because they do "spread over too much ground." It pays to till deeply and thoroughly in science, literature and art just as it does in the garden.

PEAR BLIGHT. I wish Mr. Miller would give us a little more light on his remarks about Pear blight. I have attempted to follow the literature of the subject closely, and have never seen this wash reported as having been successfully used. How does it act, and when should it be applied? —*Clarence M. Weed, Ohio Agricultural College.*

An Abnormal Growth of the Petunia: Fasciation.

The singular form of growth, known as Fasciation, is herewith shown in a most curious shape as affecting a Petunia. Our illustration was originally made from a photograph of the actual plant, and which had no less than thirty-four expanded flowers and forty-three buds at one time. These together formed the head to a stout stem, composed of very many small stalks grown firmly together. Among fast growing plants formations of this kind, in the foliage or flowers, are not unknown, but we do not recall anything quite equaling this case.

As to the cause of this peculiar style of plant growth, it formerly was thought to be due to over luxuriance, or a high degree of vitality; but more recent investigations serve to quite reverse the above opinion. It is now believed to result rather from a lowering of vital power, as various phenomena conceded to come from low vitality are, also, inseparably connected with fasciation, the essential feature of which might be said to be the production of an extraordinary number of buds, with a corresponding absence of intermediate or internodal spaces.

It is interesting to note that in trees upon which some form of fasciated branches appear, it has been noticed that the more natural branches endure longer than those having fasciated growth; in fact, the latter in severe winters are quite apt to die, while the former survive. A similar state of things is known to also attend inflorescence; a familiar example being the short-lived quality of flowers compared with the leafy growth, though exceptions in which this rule is reversed do exist, but in general the principles stated are received with favor.

While fasciation is in most cases really an abnormal form of growth, all fasciation is not abnormal as may be instanced in the case of the floral arrangement of the Sweet Williams and Cockscomb, the leaf arrangement of some Evergreens, the tubers of the Dahlia and similar forms. Here fasciation is clearly the normal state of growth.

Water Lilies: Their Hardiness and some other Points.

GEORGE RICHARDSON, TRUMBULL CO., O.

My pond of choice Water Lilies has this season bloomed beyond my expectation. An idea of their hardiness may be gained from a trial they had last fall when I drained my pond to get the carp out. The weather being so dry that I could not get it refilled before winter set in, the ground in the bottom had frozen six inches deep, when I got water in it; some of my plants were injured but none killed outrightly.

The Sacred Lotus (*Nelumbium speciosum*) was injured more than any of the others, but still is growing well. The Japan Lotus (*Nelumbium nuciferum roseum*) is doing best of all and has spread over a space twenty feet by forty feet. They commenced to bloom the last of June and will continue for about a hundred days. The flowers are of a bright cherry pink color, delightfully fragrant, from eight to twelve inches across, rising on foot stalks from three to six feet high. The leaves are often two feet across, one has even measured thirty inches and are high above the water, like the flowers. From this one patch alone we pick from ten to sixty blossoms every day.

Many people from Warren and Youngstown come here to see my Lilies, and, Lotuses being rare, it has become fashionable for the wealthy to have the blooms combined with leaves at their parties and receptions. While at first I had no intention of charging anything for blossoms still they insisted on my being paid. The pink and yellow Lilies also attract great attention, but when people see the large Lotuses they have eyes for nothing else. The Lotuses would be a grand thing for summer resorts.

These plants, like everything else, have their enemies. Insects and worms will eat the leaves, and we find it necessary once a month, and sometimes oftener to spray them with Tobacco water with a very little London purple in it, using five cents' worth of plug Tobacco with a tablespoonful of the poison to a pail of water.

To those who think of getting any kind of water plants, either choice or common, I would advise getting them in June or July, as earlier in the season or later as I have found by experience is not to be recommended.

A Remarkable Petunia.—Example of Fasciation.

Successful Eucharis or Amazon Lily Culture.

CHARLES B. WELLS, ALLEGHANY CO., PA.

In a garden which I often visit there are several pots of Eucharis grandiflora, which are the healthiest and best I have yet seen. They are growing in a loamy compost in twelve and sixteen inch pots, which are so full of bulbs that they are literally crowding each other out. They are well furnished with dark green leathery leaves, some of which measure upwards of two feet from base of petiole to apex of blade, and eight or nine inches across the latter. They bloom profusely twice and sometimes thrice a year.

These plants have not been potted for five or six years, and being very much rootbound require and receive liberal supplies of water. They also each occasionally receive a handful of dry sifted manure from the fowl house. During the winter they are kept in a temperature ranging from 50° to 60°, and throughout the summer months they have no artificial heat whatever. In a great measure they are left to take care of themselves, and they appear to do it very well indeed.

Undoubtedly the Eucharis in course of time, to some extent, adapts itself to the conditions by which it is surrounded—in a word, it makes the best of its opportunities, and thus affords to mankind generally a very salutary lesson. This remark applies to all cultivated plants, whether temperate or tropical, indigenous or exotic.

Apparently some gardeners, in their zeal to grow a plant well, fail to grow it at all. They seem, if one may judge by the way in which they treat the subject, to be imbued with the idea that growing a plant is an operation analogous to making a fire, requiring much personal attention and much fussing and poking about. As a matter of fact, plants are not at all so obstinate as these people would lead anyone to understand. They require neither force nor persuasion, but simply permission to grow—that is to say, they are only too happy to do their own growing, if no insuperable obstacles are placed in their way. It is the work of the cultivator to find out what these obstacles are, and to remove them. When he has done this the plants will grow and thrive without the aid of any exterior assistance.

A Look at the "Kimball Orchids".

W. F. LAKE, ERIE CO., N. Y.

Being an admirer and a somewhat successful cultivator of Orchids, it was a great treat while passing through the city of Rochester, N.Y., not long since, to be shown through the greenhouses containing the widely celebrated Kimball collection of these remarkable plants.

The houses are located about a twenty minute walk west from the business portion of the city, and also can be reached by the Caledonian line of street railway. Each visitor is requested to register, and also by the printed signs not to touch the flowers. From shortness of time, between trains, I could make but a hasty examination, while to enjoy so large and fine a collection considerable time is required.

The hot houses are entered first from the entrance room, the temperature at 2 P. M. being 100° Fahr. following which are the somewhat cooler Orchid houses in which are now contained over 250 species and varieties, and are constantly being added to, the gardener in attendance saying that several shipments are often received each week. When asked how many plants in all there were in the collection he expressed his inability to say, there being so many of the same kind, and the constant additions made it difficult to keep account.

The forms of the varieties are of the finest to be produced, and the plants are magnificiently grown. There is a house of Odontoglossum all of which are very fine healthy plants of all sizes and grown in different ways. I noticed all the leading kinds in profusion, but of these the most attractive at the time of my visit were O. Alexandræ from Bogota; O. cirrhosum from Equador; O. nebulosum, a Mexican native, and O. crespenum.

In the other houses were hosts of beautiful varieties, notably among which were elegant groups of Lycaste Skinneri, Cypripediums in large numbers of kinds, and of each variety separately. Cattleya Mossiæ, of which there were many finely expanded blooms on plants grown in different ways was about at its best. Cattleya Gaskeliana from Brazil was new to me and very beautiful in the warm rooms.

The Lælias, which with the Cattleyas are far the most gorgeous kinds, easy of growth, blooming freely, played an important part in the display at that time.

Some elegant specimens of Oncidiums were very attractive, one O. pulvinatum which I had never met before was a perfect sheet of yellow in the most exquisite shade imaginable. This is another Brazilian.

Aside from the more attractive forms in bloom there was much interest to be taken in those at rest, the difference looking to the various forms of growth, etc.

The attraction of the premises does by no means end with the Orchid houses, as there are several houses of ordinary greenhouse plants, also one of water plants which was to me really as interesting as the Orchids as it contains many rare aquatics, among which was the Egyptian Lotus with several expanded blooms and lots more buds com-

ing, showing that it has not reached its perfection. The tank also contains numerous Water Lilies not excluding the Victoria Regia with its immense leaves, it not showing flower at the time of my visit.

In one of the Orchid Houses, Ferns and other miscellaneous plants requiring a moist air were introduced, and here the Fancy Caladium was perfectly at home, in a large number of varieties, it receiving its second re-potting at the time.

Mr. Kimball cuts great quantities of his flowers for charitable purposes, even his Orchids. No lover of fine plants, Orchids in particular can afford to go through Rochester without seeing Mr. Kimball's collection. He most liberally throws open his houses daily to visitors; though thousands visit the place it is rarely ever that harm is done. To Mr. George Savage, much credit is due for maintaining the collection in such perfect condition; his long experience of the American climate, together with his English training, makes him one of the most practical Orchid growers of the country.

I was also permitted to visit Mr. Kimball's private residence grounds and greenhouses, and could not help but notice the great taste displayed in their arrangement.

The houses here contained nothing of particular interest excepting some large decorative plants, one Palm being at the very top and growing through the roof. Through neglect, evidently, these were not in perfect health and luxurianee, as the gardener who has charge must have his time so fully occupied with the extensive and most beautiful hardy borders, as, at this time in particular, to neglect these subjects under glass.

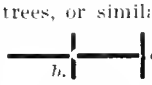
THE EFFECT OF NARCISSUSES AMONG SHRUBS

Bulbous Plants Grown in Grass.

Situations are not wanting where bulbous plants of various kinds can be grown with good effect in the grassy sward about clumps of shrubs and trees. Our illustration on this page shows the Narcissus or Daffodil put to this use, and it is safe to say that there are few other plants as well adapted to the purpose as are these.

For this kind of culture the soil of the lawn should be deep and fertile. Then with bulbs properly set they will continue to thrive for many years without molestation. It is to be remarked that for Narcissus the under stratum of ground may, under any circumstances, be quite firm, as they seem to enjoy a compact root-bed.

Another kind especially well adapted for grass planting is the little Crocus, the bulblets of which can be planted at several inches apart in clumps suited to the spot, under and about shrubs, trees, or similar positions. The flowers being almost the earliest of our colored bloomers, provide a most pleasing sight in the early spring.



Illustrating Planting in Sod.

In addition to the Crocus may also be named the following bulbous plants suitable for this style: Lilium Martagon, forming one of the finest and strongest groups; the little Star of Bethlehem (*Ornithogalum umbellatum*) is particularly suited to a somewhat moist spot. A striking effect is gained by having a carpet of Arabis alpina, or of the low creeping forms of Forget-me-not, in which various of the liner Lilies are planted. Summer Snowflakes, (*Leucojum æstivum*), carrying large white flowers tipped with green, show to splendid advantage with a shrubbery background. Such a use of plants adds very much to the attractiveness of the lawn in the vernal season.

While referring to the planting of bulbs it may be well to say that for attaining good results in the mixed borders, where these, together with hardy and tender plants are to be grown, it is necessary that the preparation of soils, etc., should be thorough at the outset. Deeply dug and in many cases trenched borders, having good manure worked in are what is wanted. With the right, thorough preparation, shrubs can be planted and brought into the background in a natural manner for forming an irregular out-line with openings between the shrub groups, being filled with plants like those above mentioned, besides quite a range of other subjects.

In planting bulbs and plants with small roots, in grass, and especially in the sward of a well-kept lawn, many planters are at a loss as how to do the job neatly. We herewith figure a simple method, well adapted for this. There is one long cut, with a short transverse one, where planting is being done. When ready to plant insert the spade at *a*, and pull the handle down so as to open the cuts at *b*, in which opening set the bulb; upon withdrawing the spade the earth returns to its natural condition, the plant being easily firmed by the feet.

Flowers of the Polar Zones.

An English botanist according to Lieut. Schwatka, in Woman, estimates that the Arctic zone gives about 1,000 or less species of plants and with some 2,000 among the Alpine flora, forming a total of about 3,000 species peculiar to an Arctic climate. Small as this cold weather class is, it exceeds the popular opinion that the polar regions and snow-clad mountain tops are practically devoid of vegetation.

While there are 762 kinds of flowers in the Arctic regions, yet within the Antarctic circle a flowering plant has never been found as the weather is more severe and there are few tracts of land on which plant life can flourish. We see that it is on large land areas where such life is the best in the Arctic, where it can absorb some of the little heat that is coming down, without being chilled to death by contiguous ice fields.

But of these 762 flowering plants only some fifty of them, so far as we know, are wholly residents of the Arctic zone. The few polar flowers that have any perfume have crept I think over the border of the Arctic circle; none of the fifty Esquimean flowers as we might call them, having any appreciable fragrance.

The colors of these boreal blossoms are quite generally of the cold tints, in harmony with the chilly surroundings. White and light yellow predominate, and these colors seem associated with frosts and cold weather. It is in the depths of the Arctic ocean that we find some of the largest expressions of plant life in that zone. Here are colossal Kelps and other life that grows continually throughout the year.

The dwarfed condition of land plants, a naturalist tells us, is not due so much to the intense cold of the Arctic winter as because they do not get enough warmth in the summer for development. Dr. Joseph Hooper mentions it as a rare property of one of the Gramina: (the Grasses,) *Trisetum subspicatum*, that it is equally an inhabitant of the Arctic and Antarctic region.

The season is too short to give annuals the time they demand for the maturing of their fruit, to insure the next season's growth so that the plants are mostly, the perennials that, like our hardy spring flora, rapidly push their growth before the snow is all off the ground, and with the first cessation of the vernal cold. Middendorff, a Siberian traveler of note, says that he has seen a Rhododendron in that country in full flower.

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811. **Cinnamon Rose.** I have never known any other name than Cinnamon Rose. It is old-fashioned and found in old gardens. Wherever once grown there will be an abundance of shoots springing up. It is the first Rose out in the spring and very fragrant.—MRS. T. H. LOVEJOY, *Mitchell Co., Iowa.*

812. **Black Spot on Roses.** This is a fungus growing on the leaves, which causes them to drop off prematurely. Its growth is most rapid during cool, moist weather, and it attacks most readily those Roses that are growing in a very rich damp soil. So far all attempts to eradicate it have been unsuccessful, as it is very tenacious of life. A good preventive is to keep the plants in a warm, dry atmosphere, say about 70 degrees, and in order to prevent the spread of the pest, all leaves should be gathered and destroyed as soon as they have fallen. CHAS. E. PARNELL, *Queens, L. I.*

771. **Sowing Wallflowers.** Sow the seed in a nicely prepared cold frame about the first of May, and as soon as the young plants are strong enough to handle they should be planted out in a well prepared border for the summer and placed in rows two feet apart, the plants standing one foot apart in the row. Keep them well cultivated, and on the approach of cold weather take up and place in as small pots as possible. Winter in a cool greenhouse, air freely, guard against damp and green-fly. When growth commences towards spring, encourage it by shifting into larger pots, and liberal supplies of liquid manure. They should be given a compost composed of two-thirds turfy loam, one-third well decayed manure and a fair sprinkling of bone dust. Good drainage and thorough waterings are indispensable to success in pot culture. If the plants are intended for open air bloom, keep them as cool as possible all winter, harden off in March and plant out as soon as the ground can be properly prepared.—C. E. P.

777. **Propagating Clematis.** You can readily increase your stock by layering the half ripened wood. When the wood is in a proper condition place the shoots in any convenient situation, cut them partially through on the upper part, and then open a shallow trench and fasten the shoots therein with a short peg, then fill up the trench, and before winter sets in cover slightly with evergreen branches. The next spring these can be taken up and replanted.—CHAS. E. PARNELL.

847. **Plants After Blooming.** Petunias and Abutilons may be cut back quite severely, and in the case of large plants have fresh soil added, first removing a part of the old. Small ones can be re-potted into larger pots. Tuberoses and similar bulbs to be given a season of rest. W. F. L.

854. **Cyclamen Treatment.** Usually these plants are grown as winter and early spring blooming plants, though they often carry their flowers till bedding out time, especially if kept quite cool after they have come into full bloom. They may be dried off and kept in a dry, cool place, watering only enough to keep the bulbs from shriveling until the first or middle of September, when they should be potted in fresh soil. Another way is simply to plant in open, shady border during the summer. This I find perhaps as good a way as the former.—W. F. LAKE.

The Day Lily.

Just for a day, for a day,
I break into bloom:
Just for a day, for a day,
I shed my perfume.

But fleeting and brief, I give
The wealth of my soul
Just for the day that I live,
Without stint or control.

What more can a life bestow
Ere it passes away,
Than its all, though its warmth and glow
Be but for a day?

—*Youths' Companion.*

Mushrooms.

Amid the pearly mists of rain,
Last night in dashes pouring,
I, watching from our window-pane,
Saw troops of fairies soaring.

And now across our dooryard's green,
Its velvet turf adorning
With dainty dots of snowy sheen,
Umbrellas lie this morning;

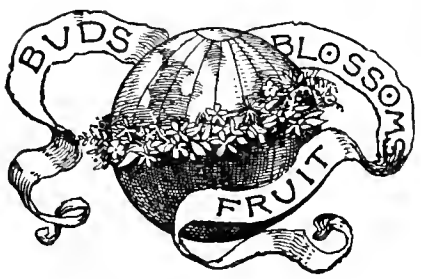
Wee, wee umbrellas lined with pink,
And still with moisture dripping,
They sheltered restless fays, I think,
Who longed to be a-tripping.

—*Florence Scollard Brown.*

The Watermelon.

In vernal massiveness you're seen,
In produce stall and windowed niche
And tempt the palates of the green,
Likewise the purses of the rich;
Who has not felt your mighty thrall?
Alas! you double up us all.

—*Boston Budget.*



Save the lower pods of Limas for seed.

No better month for lawn sowing than this.

The Tamarisk is of the best sea-shore shrubs.

We urge September planting for hardy bulbs.

Parsley, plain rather than curled for best flavor.

Asparagus tops should be well ripened before cutting.

Cleanliness for Camellia leaves is as essential for health as for looks.

Weeds with now being unerowded shoot up to a crop of seeds very quickly.

Weight indicates the degree of flowering power in a Hyacinth, as a rule.

Seed pods, if left uncut on herbaceous plants, will reduce next season's flower crop.

Dry brown bread and ripe raw fruit eaten together form my perfect meal.—*C. C. S.*

Humbug is another name for the "Jewel Gooseberry Tree." Let our new subscribers beware.

The Tomato has been grafted on the stalks of its near relation, the Potato. There came no gain from the union.

Mistaken for a Butterfly. I saw a Pansy and when I was going to pick it, it flied away.—*Little Three Year Old.*

The Jerusalem Cherry (*Solanum*) to come in early with richly colored fruits needs a light soil and good drainage.

Phlox Drummondii laciniata is our old favorite improved by being fringed. It is as worthy of culture as is the type.

"A little leaven," etc. Its a caution how a few poor specimens of fruit in a basket tend to pull down all to their own level.

A bunch of Artemesia on a Chinaman's door serves both to keep away demons and to warn callers not to enter. So John makes out.

At a ripe old age. The famous Pear tree planted in 1630 by Gov. Endicott at Danver Mass., having reached the age of over two hundred and fifty years, died recently.

To preserve Scarlet Runner Beans, pack in an earthenware jar, placing a layer of salt first; alternating Beans and salt, placing a layer of salt on top. Steep in water before using.—*W. H. J.*

For This we Strive. As an example of the successful condensation of a vast amount of horticultural information, bringing it into a most pleasing and readable shape, your journal certainly stands unique.—*J. Chamberlain.*

What is said to be a favorite English remedy (which anyone might try,) for green fly on large-leaved plants is to wash the leaves with a mixture of soft soap and a tablespoonful of petroleum to a gallon of hot water, keeping it well stirred.

French Market Gardeners seem to be as energetic in selling as in growing their produce. To find a market they have pushed over into Great Britian, including even London, Liverpool, and Glasgow. England seems not in all respects to be the garden of the world.

The new Abutilon "Eclipse" is very attractive It is a cross between the variegated leaved Thomsonii and vexillarium. The foliage is much larger than the latter, and finely marbled, yellow and green. It bears red and yellow bells all along the branches; excellent for a hanging pot, or a window bracket.—*M. D. W.*

Historian Bancroft's Rose garden at Newport, R. I. was spoken of by a local journal as a most attractive place during the past season of bloom. It contains many magnificent specimens of floriculture, and the aggregate number of plants cultivated is great, being something like four thousand and includes nearly all the varieties.

Training to a Hoop etc. We often have the question asked us, "How shall I train my weeping deciduous trees to droop their limbs?" When small we draw a hoop down over the limbs, and when too large for this, tie a string to the end of each limb, and draw it down and tie the other end of string to a fancy stone or to a little stake driven into the ground.—A. M. P.

Spinach to be sown early this month for the first spring greens, although a very easy growing plant always repays well for some extra attention to cultivation and manuring during the fall; with a spring top dressing of six or seven hundred pounds sulphate of ammonia per acre, As winter sets in a covering of hay or boughs is usually placed over the crop.

Distances for Bulbs. The annexed little chart, the cross lines of which represent inches, will serve to give a better idea of the depth that bulbs to be set in the fall should be covered, as well as their distance apart, than many words could do. It is an object lesson which, if it be kept near at hand for consultation when the bulbs are being put in, will keep the planting within proper limits just as should be done.

A Cactus Hedge. A correspondent in Texas says on this prickly subject: "For a hedge, our Hedge Cactus is quite a superior plant. It is easily and quickly grown from cuttings set directly in the hedge line. The plants do not cause shade to the damage of crops, as it grows no more than eight feet high. It does not sprout, requires no pruning, and becomes so thick that a rabbit cannot get through it."

Sweet Potatoes. These can be kept in bulk without difficulty by providing a room in which the temperature has no greater range than 50° to 60°. Where there is more variation they should be packed in some such material as leaves, chaff, sand, etc. The Sweet Potato is so easily grown and is so nutritive that no one having land ought to be without them at least from September to January, being easily kept that long. I keep them the year around.—*E. A. Riehl.*

A Frost Rack. I enclose a rough sketch of a little home-made affair of mine which is used in the way of protecting tender plants from early frosts. It is a light rack made of several four foot cleats either planed or unplaned, and connected by a cross piece which passes through holes as I try to show in the drawing. This rack serves simply as a support for a cloth sheet that is to encompass the plants for protection. To keep the rack from spreading the feet may be settled into the ground slightly.—*James Wilson.*

Pineapples in the Window Garden. A Memphis, Tennesee amateur claims to have had this successful experience in raising a Pineapple plant for the window: She cut the tuft of leaves on an Apple at its juncture with the fleshy part, pulled off some lower leaves and inserted it in a jar of water. In time roots appeared, then the plant was potted in rich sandy soil with good drainage and placed in the lightest place at the window, with plenty of water, given warm. This plant after awhile formed a fine specimen.

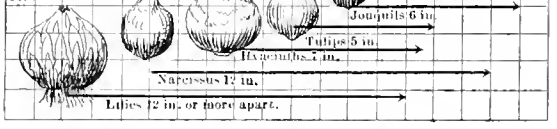
Carnation Pinks from Seed. Our correspondent from Oneida Co., Ill., in an article containing directions for growing what she calls "Carnation Pinks" but which, being a perennial and hardy, we infer is confused with Dianthus hortensis, quite similar in appearance, but biennial and entirely hardy says: "I sowed the seed in a hot-bed where they germinate quickly and when large enough they were transplanted right in a garden bed. Though without protection last winter they this season bloomed freely, double and single, with great variety of color,"

A Plague of Worms. We are being tormented by an army of worms having a horn at each end; of various colors and one and a half to two inches long. They move to the westward eating many things voraciously and especially Grapes, of which they devour vine and all. They also trouble the Yellow Transparent Apple much but other varieties seem to escape, Tomatoes are exempt. With sheep shears we kill them by thousands and by going over the vines and trees two or three times a day besides washing them off, we hope to save a little fruit from their ravages, as these worms have been here nearly a week.—*J. E. White, Reno Co., Kansas.*

A Steam Dose. A method out of the ordinary for killing that universal plant-pest, the green fly, is told about by correspondent, G. W. McClure, Champaign Co., Ill.; "In a pail place fresh Tobacco stems or leaves and cover with water, letting it stand until the water has become dark colored. Then by means of a gasoline or other stove boil the clear liquid entirely away. The fumes seem to be as effective as smoke with no danger of injuring the foliage nor stopping work in the house where used, and the odor does not remain on the flowers as from smoke. The expense however is a little more than smoke fumigation, being better for use in dwellings."

Flowers and Consumption. It is stated on the authority of Dr. J. Anders that floriculture undoubtedly tends to the prevention of consumption and that in many cases it had better take the place of travel to another climate, with its attendant fatigue, often far from beneficial. But the patient must attend to the plants personally so as to get the full benefit of the exhalation arising from them. The doctor further comments on the well known fact of the general health and longevity of florists and gardeners, and finds that although among this class there is a slight tendency to rheumatism, there is evidence to show that floriculture arrests consumption.

Hardy Roses for the West. In view of Prof. Budd's (Iowa) remark that the West must have a class of Roses combining in hardiness the qualities of Rosa rugosa and the beauty of eastern Roses, the experiments in this line carried on at the Rural New Yorker Farm have resulted encouragingly. Mr. Carman reports that he at present has sixty hybrids; the first that bloomed (parents pink and yellow) was almost the color of Gen. Jacqueminot. It appears hardy, has fine foliage, semi-double, and resembles a Tea Rose in form and fragrance. It was named Mme. George Bruant, and perhaps is the first of a new class of Roses destined to flourish on the prairies. —*E. E. S.*



A Convenient Bulb Planting Chart.

Violets in France. Napoleon, when First Consul, asked Josephine what present he should bring on her name-day. "Only a boquet of Violets," she had replied. From that day Napoleon loved the flower, and Josephine always had Violets about her. While at Holand Napolean planted Violets, and when the Emperor's remains were restored to France, the coffin was covered with boquets of Violets. In the early days of the Second Empire, on the 15th of November, it being the Empress' name-day, there was an ova-

tion of Violets offered to her. Tens of thousands of bunches were thrown over the railings of the Tuileries. The servants piled them up into pyramids which reached as high as the first floor windows. They decked the doors with them, and the great balcony, from which the Empress greeted the people, seemed made of Violets.—*Youths' Companion.*

The Purple Fringe. In South Europe, in our Southern States, and over a large portion of the states east of Lake Michigan, the Venetian Sumach, or as we call it, Purple Fringe, (*Rhus*

Clump of Roman Hyacinths.

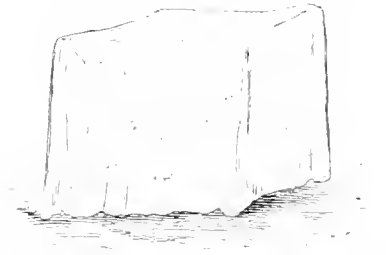
cotinus,) stands in the select lists of shrubs for the lawn. But the variety originally received from the nurseries of Southwest Europe has not proven hardy in the West, except in a few favored spots south of the 41st parallel. But our observations in Central Russia convinced us that Loudon and other authorities were wrong in assigning the species exclusively to "sunny places in the south of Europe and Asia, from Spain to Caucasus." As imported from Voronesh, in Central Russia, we find it to be perfectly hardy, and even more beautiful in foliage and flower than the real Venetian Sumach. Our bushes are now the "admired of all admirers," and show no traces of winter injury.—*Prof. J. L. Budd, Iowa Agricultural College.*

Do You Grow the Roman Hyacinth? We doubt not that many who read this article are not well acquainted with this distinct, handsome, sweet and early blooming Hyacinth. No better recommendation of its great value for winter cut flowers could be given than the fact that commercial florists force it to an extent equaling without doubt, that of all other varieties of Hyacinths put together. The preferred color of the flower is white. The spikes of bloom are distinctively delicate in appearance, being quite slender in their parts as compared with ordinary varieties. They are also produced more freely than the same in ordinary kinds, the rule being about four or more spikes from each strong bulb. Another respect in which this variety stands alone is in earliness of blooming; started at the same time as others, it will be in flower easily two weeks ahead of the earliest single sorts. It is, in fact, the only Hyacinth that can readily be brought into bloom as early as December. It requires the same treatment as other varieties.

The annual index and title page for volume III, closing with this issue, appears in the present number. The manner in which the four pages which it comprises are inserted requires only that the stitches of the paper be taken out to release these intact for use in binding. To say that we are proud in having laid before our readers the matter in the present volume represented by such a complete and elaborate index but fairly expresses our feelings. It has been our aim as publishers to give in the volume now closing, a greater amount of valuable matter, a greater number of costly engravings, and all of better quality, as regards type, presswork and paper, than has ever before been offered, in the world on horticultural subjects, for the money. Whether or not we have succeeded in this remains for the reader to say. Do you ask regarding the future? Our answer is judge of this by the past, but don't hesitate to invite your friends who are interested in horticulture (and who is not) to venture a dollar on a years subscription for themselves.

Orchid Collecting. Every portion of the tropics remarks the Boston Advertiser, is now being searched by Orchid hunters sent out by the London importers of rare specimens. One has sixteen collectors in various parts of tropical South America, Africa, Asia and the islands in the Pacific and Indian oceans, and they employ many natives, in fact one of our consuls in Venezuela reports that the Orchid trade is rendering the country prosperous, as poor men will often obtain more for an Orchid root procured from a swamp or the branch of a tree than they received for hard labor during a dozen years. Collecting is attended by dangers and losses of property as many valuable specimens are lost on account of lack of facilities for transportation. One London dealer was lately informed that 19,000 Orchids had been ruined on the Red sea during a storm. Another instance of loss among the Philippine Islands is that of 20,000 specimens being spread on the beach to dry, when an unusually high tidal wave swept them all into the sea. A collector in Peru had his roots in sacks on mules, which were confiscated by a party of soldiers, who laughed about the Orchids having value.

Rockery for Bulbs. To our mind many things may be better grown in a rockery, however small, than in the open border, and this especially applies to a large number of the smaller bulbs. Our friend "Amateur Gardener" tells how to construct such a one as follows: In a sunny situation mark out the site, giving as irregular an outline as circumstances will permit, dig out the soil to a depth of two feet and put a layer of one foot of rough stones, broken bricks, and so on, to afford drainage. Over this put the roughest of the dug-out soil until level with the ground line. Then select the largest of the rockwork clinkers or stonework, and place them closely together round the margin to retain the rest of the soil. Of course, to have it raised, more soil than that excavated will be required, and this portion should be of good quality, and have a liberal proportion of sand mixed with it. Fill up to the level of the bordering work, and let it settle for a few days, afterwards putting on more to the required height. Over the surface of the completed mound, bury about half deep, and to present as natural appearance as possible, more stones, leaving in the course plenty of interspaces for the occupants. When the whole has well settled down, the planting may be proceeded with. Suitable bulbs are plentiful, and a selection may be made of Snowdrops, Crocuses, Narcissus minor, Lilies, Chionodoxas, Hepaticas, Anemone apennina, Bulbocodium vernum, Frittilaria meleagris, Muscari botryoids, Scilla Siberica, Corydalis bulbosa (solida), Winter Aconites, Gladiolus communis, Allium neapolitanum, Spanish and Persian Iris, Sternbergias, Colchicums, Anemone coronaria, A. nemorosa, Ranunculus, and so on, all of which are dwarf in growth, and would prosper in such a situation. For the sake of variety, a choice might be made of herbaceous plants such as Iris pumila, Primroses, Aubretias, Dielytra eximia, Trolliuses, and Phlox reptans, while some of the Sedums, Sempervivum and mossy Saxifrages, particularly S. Camposi, would offer a pleasing contrast. Where the space permitted, a few larger-growing plants might be intermingled to break the uniformity of growth. These will readily occur to anyone with the slightest acquaintance with gardening matters, but Snapdragons may be mentioned as particularly suitable. The above list is very far from exhausting the plants adapted for such a pur-



A Frost Rack with Cover. See opposite Page.

pose, and no doubt every one will have a particular favorite to make conspicuous. One of mine would be Zauschneria Californica, which would delight in such a situation, and be one of the brightest ornaments in the autumn. *Adam Reau.*

Floral Happenings in New York.

The society papers say that nothing is taking place at present, and the florists echo that statement. There is really nothing in the way of decorating in the city, and naturally business is very dull. There are many events calling for floral work at the summer resorts, chiefly dinners and luncheons, but all the original ideas are being reserved for the more remunerative season. Gladiolus is used a great deal in large pieces; a big sloping basket of yellow Roses and sulphur colored Gladiolus was very handsome. Very few Hybrids are to be seen; there is always a dearth of them at this season.

There is a tendency to form decorations of several sorts of flowers, instead of combining it to one. As a rule, Roses are taken as the central idea, and other flowers added to them. Pansies seem to grow in favor; the present strains are so fine that it increases the estimation in which this popular flower is held. Sweet Peas are still in high favor. Some very pretty dinner and luncheon arrangements are made with loose masses of this flower, shading from white through all the variations of pink to crimson. The handsome new strains of Hollyhock, such as Peter Henderson has sent out, are used effectively in floral work, especially the white and some soft tints of yellow. But it is unwise to put them in the vicinity of more delicate flowers.

Some pretty lettering has been done with flowers of Browallia elata; its intense blue is prettier than the usual Immortelles. Not that a high class city florist is in the habit of doing much lettering, even when he makes designs. It is more usual to make a plaque cover for a casket than to make an ordinary set design. Whenever designs are attempted they are simple and graceful, while the custom of decorating the rooms in which funeral services are held is both beautiful and appropriate.

At one watering-place dinner some little time since there were little Orange plants on the table, but the Oranges, instead of growing naturally, were filled with jellies, Chinese fashion, and fastened on. However, this was a confectioner's, rather than a florist's, arrangement.

All through the summer we see striking arrangements of rather course flowers, which are as much a matter of necessity as of taste. Really, there is not a very wide selection to choose from during July and August, hence the bold combination of Gladiolus, Hollyhock, Calliopsis, Coreopsis, and the like.

A little later we shall see gorgeous arrangements of Golden-rod and Asters, which have been fashionable of late years, and then the flood of Chrysanthemums will begin to vex the souls of the Rose growers. The finest floral arrangements always contain Orchids; many beautiful and easily grown varieties are in flower during the summer months. Miltonia spectabilis is very useful; so are many Odontoglossums and Oncidiums. Some charming bouquets have been composed of a centre of these flowers, with a border of loose Roses, the Orchids being raised above the latter. The prettiest green to go with this arrangement is Adiantum Farleyense or cuneatum; most of the large florists try to get up a good supply of these useful ferns.

There is some disposition towards higher table decorations; a tendency to use light Palms or Ferns, as formerly. Still, this depends on the taste of each individual decorator. Those pretty fairy lamps used last year are now out of style; gone to the same limbo as colored satin tablecloths. Lately, one would see more Sweet Peas worn on the street than any other flowers. Women wear neat little bunches of them, while men wear a cluster of two or three. They fade quickly, but are charming while they last.

Some of the watering-place correspondents have been telling us a lot about the elaborate use of flowers there. One woman was described as carrying a parasol with ribs and border of natural flowers, which were, of course, removed daily, but there is a strong supposition that the writer drew on his imagination for big facts.

The prizes for floral designs offered by the national Society at the New York convention will call out a little originality, it is hoped. Doubtless there will be something of the kind at the Chrysanthemum show in the autumn. If we have the promised great private show we shall be likely to see some very fine decorative effects. A regular jungle of the Dove Orchid is promised, which, if advertised, will draw a great many. All the non-professionals expressed much disappointment at the last Orchid show, because this flower was not forthcoming, and appeared deeply injured because it could not be flowered at that season. A little typographical eccentricity in the last issue makes me speak of Lenedendroi; Leucodendron was meant.

Emily Louise Taplin.

The Peach Tomato is interesting as a novelty with a singularly sweet flavor, but it is too small to have value except for pickles, or possibly as a parent to new varieties. —*E. S. Goff.*

The Shaffer Raspberry. It was reported to the Ohio Horticultural Society by various growers, that this sort was of special value for evaporating, losing but little more than Blackcaps and bringing a better price.

Cauliflower Shading. Dr. J. B. Ward, of New Jersey, recommends the use of a rather thick quality of tissue paper for the purpose, the edge being tucked down between the fruit and leaves; not only keeping it white but also protecting from the worms.

Keeping Pears for Winter Use. President Townsend, of the Muskingum (O.) Society, said that he put them in a cool room and in barrels and boxes—the barrels only about a third full—and picked them over every week or so to get out the ripe fruit. If exposed to the air too much, or getting frosted before picking, Pears would wilt. But with care he believed Pears could be kept as well as Apples.

Apple Trees and Manures. Secretary Woodward, of the New York Agricultural Society, recently stated that an Apple orchard draws more heavily upon the soil than grain growing. One hundred barrels of Apples, in his estimate removed from the land about as much phosphoric acid as 100 bushels of wheat, and about as much potash as fifty bushels. He concludes that potash and phosphoric acid are the principal elements to apply to orchards.

Raspberry Blight. Around Columbus, a large proportion of the Raspberry canes begin dying at the top. On some the tops are dead, on others half the cane from the top downward, and frequently all the fruiting canes of a hill are dead. Very little is known of the disease, but it is sometimes designated as the "Raspberry Blight." Some plantations have been entirely destroyed by it. Slight traces of it in other parts have appeared and disappeared, occasioning alarm.—*O. W. Aldrich, to the Columbus, O., (O.) Society.*

Radishes in Japan. No vegetable affords more variety, or more extensively used in Japan than the Radish. They vary from those in this country both in color and shape, being mostly cylindrical fusiform or club-shaped, of a light color, and from one-fourth of an inch to over a foot in diameter, and from six inches to over a foot long. So numerous are the varieties that they are to be had the year through; spring sorts being small and solid, those for the fall large and tender.—*Kizo Tamari, Japan, to the Am. Horticultural Soc.*

Strawberries in Pennsylvania. G. R. Ressiguie, in the report of the Pennsylvania Board of Agriculture, says that Susquehanna county produced ten thousand bushels, not a full crop; and the average price above express and commission was about two dollars and twenty-five cents a bushel. The average yield from new beds was a little over 150 bushels to the acre, but some went beyond 200. The trouble is that too many cling to the old bed, the small varieties, the wide matted row, careless picking and packing, so the supply was much below the demand.

A Narcissus for Water Culture. The *Polyanthus Narcissus*, unlike the other species may be bloomed in water, the same as the Hyacinth. The Chinese in California, import a great many of these bulbs and plant them in bowls and dishes. They take a lot of nice, white quartz pebbles, and fill their dish or bowl heaping full and build their bulbs in, so that the bulbs will be firm, and the bottom of them about an inch from the bottom of the dish, and they have them in all their glory at the Chinese New Year, which occurs generally in February.—*Mrs. Bradford, before the Columbus, Ohio, Society.*

Treatment of Daisies. Either the White or Red varieties grow from seed sown thinly in August or early September, and transplanted into frames protecting with evergreen boughs, straw, etc. In the spring I use them to border almost everything, as they bloom early and for a long time. Divide the plants as they get so large as to be in danger of dying off, if in the fall; treat during winter as seedlings, except some to be put into pots for house plants. Perhaps one objection to raising from seed is that many are single the first year, though they come mostly double the second season.—*Chas. Hirschinger, Baraboo, Wis.*

Vegetable Degeneration. Vegetables grown annually from seed cannot degenerate, though the seeds may be mixed and new sorts produced. The Potato, indigenous to the mountain sections of Mexico and South America, affords the best illustration of the importance of renewal by seed. As usually grown from the tuber, it thrives for about twenty-five years, when it manifests a decided tendency to degenerate; then new seedlings in their turn produce good crops and for a given time. Out of a dozen or more varieties grown in the past, only the Early Rose and Hebron are now cultivated.—*O. W. Hudson, Mass. Horticultural Society.*

Jessie Strawberry. I think the reason that J. M. Smith's trial with the Jessie has been so unsatisfactory, is because he has been too good to it; he has literally killed it with kindness. Any one who has visited his garden knows that it is under the highest state of cultivation, consequently the Jessie does not thrive there as does the Wilson or any of those varieties that are great feeders and with which he is successful. The Sharpless, of which the Jessie is a seedling, is not a success in a rich soil. To me those little rows of sturdy Jessies, growing in gravel upon Mr. Loudon's grounds, had a deep significance. They told me more plainly than did the luxuriant ones growing near them in more favorable soil, that here was a Strawberry for all, the careless as well as the careful cultivator.—*V. S. Campbell, before Wisconsin Horticultural Society.*

The Horticulturists of Missouri are thus interested in the matter of contributing to the great St. Louis Exposition, beginning Sept. 3d, and closing Oct. 20th, by the officers of the State Society: Let every county society make an effort to show well, and let counties which have no society (but ought to have) take hold and send in a collection of fruit, as fast as they ripen, to the St. Louis Refrigerator Co., who will hold the fruit free of charge, by express pre-paid, and have your name marked plainly on it for St. Louis Fruit Show. Pick your fruit while firm and hard, pack well in one-third bushel boxes putting only one or two varieties in a box; wrap each specimen in several thicknesses of paper. Send none but perfect specimens; no bruises, worm holes, scab marks, or broken stems; have every part perfect.—*L. A. Goodman, Secy.*

Budding, Grafting, Cions, Etc. A. F. Coleman, in an address on this subject at the Iowa State Horticultural Society's meeting, said: Of late, budding seems to interest most of us. The traveling peddler has found a remedy in days past for root-killed trees, blight, and in fact everything that has been a hindrance to an abundance of fruit on every table. And just now he's telling the dear people: Buy budded Apple trees of me at 25 to 50 cents, and you will succeed, when he could get a good grafted tree of most any reliable nurseryman for 10 cents, that is worth ten times as much. In my opinion this budding-Apple-tree business is a grand humbug. I think more time and money will be lost to our planters by this than by any other humbug that has ever been practiced on them. We know not more than one seedling in a thousand is hardy enough to stand our Iowa winters. And when you bud ever so hardy a variety on a tender stock, your tree is worthless, whereas, if you graft a section of the root with the said hardy variety, your tree will be a success.

The Work in Wisconsin. A very interesting summer meeting of the State Horticultural Society was held at Ripon, June 28 and 29. The little city of Ripon in the midst of a splendid farming country, is noted as a center for small fruits, especially Strawberries and Blackberries. Of these kinds there are several hundred acres in the immediate vicinity. The display of Strawberries at this meeting was wonderful, and the Jessie bore off most of the prizes, as well as winning increased popular favor. Mr. Loudon, the originator of this variety sent for exhibition a number of new seedlings, designated by numbers. Mr. Loudon is an enthusiast and will test new varieties while he lives, for it was bred in him. The papers read were of a high order of excellence; but the one which professionals were most interested in was by J. C. Plumb, of Milton, on "Top working the Siberian as a means of increased hardiness." Mr. J. V. Cotta, of Illinois, followed up the discussion with specimens of trees two, three and four years old, worked with different varieties. This subject will be further discussed at a future meeting. A committee was appointed to draft a bill to be introduced at our next legislature authorizing the Governor to appoint an Arbor Day. Horticulture in our State is assuming an important position.—*B. S. Horie, Secretary.*

Improving The Highways. Mr. F. E. Skeels, of the Grand Rapids, Mich., Horticultural Society recently said: Do not limit the trees you set out in the highway to the prescribed 60 feet apart, but arrange them in clumps, putting, if you please, a continuous row for continuous shade, but break the monotony in some way by arranging them as nearly as possible after nature's plan, remembering that she knows nothing about straight rows. Of course they take from the fertility of the field along which they grow. So does the Apple tree or the Corn stalk; we grow the latter for the stomach's sake, and the former should be grown and protected for the sake of our finer qualities, say more for the benefit of the neighborhood and the traveling public. I wish to impress the fact that the highway was not made for teams alone. The law recognized this fact. Instead of turn-piking up all the dirt from the roadside, leaving a ditch filled with stagnant, death-breeding water or slime, let us go a little farther and haul dirt from where it can be better spared, and put some along the grading and rolling it nicely, putting in a tile culvert where necessary to carry of water, thus adding a sidewalk to our roads, a benefit to the public, and a considerable value to our adjoining lands. We have laid some plank in our district, and although the overseer was censured for spending money that way the public appreciates it.

Worm on Honeysuckle. The sweet Dutch Honeysuckle has, with us, a particular enemy. This species, which is one of the climbing cutworms, first came under my notice two years ago, and has not previously been catalogued among injurious insects. The young worms hatch just as the blossom buds appear in the spring, and in their pale pinkish and green colors simulate so perfectly the color of the buds along which they extend themselves, that it is very difficult to distinguish them. After the second month, they become darker, gradually assuming a mottled brown and gray color with lighter stripes. They feed only at night, and almost exclusively on the flower buds, cutting them off in large numbers. They desert the vine early in the morning and conceal themselves on the ground under fallen leaves or the like. Having once discovered their habit, we last year trapped great numbers by means of chips, bits of bark and the like, placed under and around the plants. These traps were examined and the worms removed every day while their season lasted, and comparatively few have appeared the present season. When grown they form for themselves substantial, oblong cocoons of silk, intermingled with particles of wood and leaves, from which the moths emerge in ten or twelve days, late in May and early in June. The moth expands somewhat more than an inch, and is inconspicuously colored in grayish brown, with the fore wings longitudinally streaked with black, and crossed by two curved and wavy stripes of black and white lines. The hind wings are paler, shading to dull white near the base.—*Miss Murtfeldt, before the Wisconsin State Society.*

Cider and Cider Vinegar Making.

[*H. M. Dunlap, before the Central Illinois Horticultural Society.*]

The demand now is for a sweet beverage retaining the flavor of the fruit and beneficial to health. It is necessary then to keep cider sweet, and to do this sound ripe fruit is a necessity, for it is impossible to make first-class cider out of poor fruit.

The Apples must be reduced to a fine pulp and pressed through cloths which retain all the pomace. The product then, after filtering, is ready to be stored in the cellar in barrels scrupulously clean; to sum up, good cider depends upon sound, ripe fruit, clean handling, clean packages and the best machinery.

Fermentation. Before taking up the process of preserving cider in its sweet state, let us consider the cause of fermentation. According to the germ theory of fermentation, certain microscopic spores that exist in the air, come into contact with the cider at the very first step of its

manufacture, it rots and the cider undergoes fermentation. Now in the case of using rotten Apples, which being filled with these organisms that have already induced decay in fruit, it is folly to grind them up with sound fruit and expect the product to remain sweet. These spores excluded in the rotten fruit, we find it easier to control the dormant spores that are in the cider. The racks and cloths, if sour, contain these active spores, and hence the necessity of steam or boiling water to destroy them, keeping the utensils entirely sweet and pure.

Fermenting spores apparently are much more numerous during those days described as "muggy"—close or sultry. On such days as these cider will ferment sometimes before it leaves the press. Clear days, therefore, together with cool temperature, are best for successful cider making. Hence we should plant varieties of fruit that can be made into cider late in autumn or early winter; cider made in winter keeps sweet better than that made in early autumn.

Keeping Cider Sweet. The best and only method of preventing fermentation in early-made cider is by heating to 175° Fahr., and placing in an air-tight package and sealing up while hot, following the usual method of canning fruit. Cider put up by this process I have kept through the second summer, as sweet as when it ran from the press. The objection to this method is that it changes to some extent the flavor of the cider, and when opened for use it ferments just as does canned fruit. A method of preserving late made cider is to add some antiseptic, advertised in the cider journals, which has as its active ingredient either sulphur or salicylic acid, the latter being the most used. One ounce of the acid to thirty-two gallons of cider being the rule, the quantity being so small as not to be detected, and not injuring it for vinegar making.

Vinegar Making. One after another method was laid aside as useless or inexpedient and I have gone back to barrel manufacture, but have decreased the length of time over the old process in a very simple manner. The cider for vinegar made and barreled, the barrels are elevated into an upper story, and on the approach of winter one third of the contents of each barrel is removed and placed in other casks, leaving the barrels two thirds full. Then I leave the barrels and allow the frost to do its work, with no danger of bursting, as there is room for expansion.

In the spring, when thawed out, the barrels are rolled over in order that the contents may again be intermingled, and then allowed to stand. By May or June, almost every barrel so treated is excellent vinegar, while if they had been placed in the cellar over winter, many barrels would not become vinegar within two years. Do not, however, leave vinegar already made exposed to the frost. One object in having the vinegar in an upper story is to escape that pest of the vinegar-maker, the barrel worm.

Market Gardening.

[*U. E. Dodge, of Fredonia, before the Chautauqua Co. Horticultural Society.*]

Near all villages and towns there is a demand for garden products which is seldom fully supplied. To supply the market daily with good vegetables and fruits with profit, requires considerable knowledge of kinds and culture. Of course in a short essay, I cannot give in detail all the modus operandi of this branch of horticulture, though I have had a working experience of over a quarter of a century in it. But I will endeavor to give some practical rules and principles to govern the gardener.

Location. The most favorable location for the garden is a gradual inclination towards the east, southeast or south, that it may have the morning sun to warm and quicken the young germs into growth, and insure early maturity.

A northwestern aspect, although cold and late, is less liable to injury from late and early frosts, as vegetation here is sheltered somewhat from the rising sun, and does not suffer so much if slightly frozen. The frost does not injure so much as the heat of the sun on the frozen parts.

Cabbage, Cauliflower, Spinach, Lettuce and most of the salads, are more easily brought to perfection in a northern exposure. The soil, too, is often richer and will retain fertility longer, other things being equal.

When the drainage is good, the level is not undesirable and may have some advantages absent from a rolling surface, but whatever the aspect or surface, the soil to be smooth and level.

Care must be taken that the productiveness of the garden be not diminished by large trees and shrubs, which are injurious by their shade, drip and absorption of moisture. Shrubs and briars also present an untidy appearance, give protection to vermin and form a reservoir in which is stored all sorts of weed seed.

Water in the Garden. If streams cannot be made available the surplus water from the eaves of the adjacent buildings may be saved in reservoirs. Many garden crops are often of interior quality for want of watering. Especially so are Lettuce and Cabbage, being often hard and stringy, Turnips and Radishes not swelling, Onions drying off and decaying, Cauliflowers wilting, making feeble growth; in dry seasons also the garden becomes more infested with insects. Newly transplanted vegetables need watering, but this must be done with judgment.

Men Fitted for the Business. The business of market gardening is a laborious one, and no one should engage in this branch of industry who is unaccustomed to manual labor, who is not constantly observing and prompt to do whatever the needs of his business require.

Fencing. The objects in fencing are: A feeling of security, that no intruder may destroy the fruits of our labor; to protect plants from cold winds and shade those that require it. A close board fence is sufficient, but a brick or stone wall is preferable on account of durability. Hedges are objectionable where land is valuable. Not only that they occupy an undue proportion of the surface and thereby lessen the products on a given area, but they also give protection to mice and insects that prey upon the crops.

Soils. The character of the soil is of as much importance as situation and aspect. In selecting grounds for the market garden it is of the utmost importance that the soil should be mellow and capable of being easily worked. The best soils are of a pliable, loamy character, with porous subsoil, the poorest a light sand or stiff clay.

Almost any soil can be brought up to a good state by adding the proper manures. If not naturally deep it should be made so by subsoiling as deep soils retain a greater supply of moisture in dry weather. Neither do they become so wet in rainy seasons, as the earth retains the rain; and if equally fertile furnish plants with a more abundant supply of food than shallow soils. A dark color, other things being equal, should have the preference, as such absorbs heat more readily and in larger proportions than those of a lighter hue, and with no perceptible difference in fertility, vegetables mature several days sooner on the dark. Soils not naturally fertile are not easily brought up to the proper standard, for it is difficult to mechanically prepare unproductive soil so as to produce remunerative crops.

Form of a Garden. When it is a matter of choice, a square or parallelogram extending from east to west gives a long south fence for shading in the hot summer, and a sheltered border for forwarding early crops in spring. For large market gardens an oblong square shape has the advantage of giving longer rows with less injury to crops by often turning the horse. Straight parallel rows are the pride of good gardeners.

Cultivation. If the soil is porous the air enters more readily, deposits more liberal quantities of fertilizing gases, which are in the atmosphere ready to be yielded to the soil under favorable conditions. Poor ground, deeply cultivated, frequently yields better crops than rich with shallow tillage, and when land has once been thoroughly tilled in this manner it is easy to keep it properly cultivated. Increasing the depth of garden soil to all intents increases the size.

Size of the Garden. A small garden, well managed and properly cultivated, a good location and selected varieties will yield more profit than one poorly cared for, many times its size. In the old way, where everything had to be done by hand, two or three acres was considered a large area for one man to cultivate, but at the present time with the aids that the progressive gardener brings into requisition, four times that area may be successfully cared for.

Improvement of Soil. A clay soil may be rendered more porous by under-draining, subsoil plowing, the application of sand, unfermented manures, turner's shaving, sawdust, ashes or lime. A wet soil is always cold; as the same quantity of heat that will warm dry earth four degrees will warm water but one. Frequent working of the soil is always very beneficial to retentive soils. A light sandy soil requires vegetable matter, which may be supplied by plowing under such crops as Clover, Rye, Buckwheat and others of like character. Stiff clay spread over the surface several inches deep in autumn and left for winter frosts to pulverize, and this thoroughly mixed with the surface soil the following spring, acts very beneficially. Muck, carbonaceous substances of all kinds, vegetable manures, lime or ashes, each seems to have the property of rendering heavy soils lighter; light soils more tenacious and both more productive.

Every cultivator of experience concedes the importance of drainage. It deepens the soil, lengthens the season for labor and vegetation, and promotes the absorption of fertilizers.

Using Manures. The garden should have ample drives for the transportation of fertilizers, gathering crops, etc. No gardener will let the opportunity pass to increase the size of the manure heap, for no matter how favorable the soil, he who fails to make annual liberal applications of manure gets no crops, such as are seen in the market gardens of our large cities, where from fifty to two hundred loads of stable manure are applied to the acre.

Horse manure is the best, bulk for bulk of all stable manure. In the compost heap is contained all the elements, gathered from various sources of vegetable growth, if properly managed. Carbonaceous material is obtained from the decay of vegetable matter such as leaves, wood, fruits, straws, etc., collected into masses, which rapidly undergo fermentation and are soon in proper condition for plant food.

No substance is so well adapted to composting with the different manures and night soil as dry muck. It deodorizes the substances, retains all their valuable elements and renders them more available for plant growth.

(*To be Continued.*)

Culture of Roses in Pots.

[*Mr. D. Gilmour, before Walkley Horticultural Society, Sheffield, England.*]

Procure fine open-ground plants early in the autumn and pot them as soon as possible.

Potting. At the first potting place the plants into as small pots as the plants will allow. Rather err on the side of too much drainage than too little. A compost like the following should be used: One part old sods or good turfy loam, half part of old manure, one-eighth part of leaf mould, one-eighth charcoal or sand, well mixed together. The soil must be well rammed. Any old thick roots should be cut back, but all fibrous roots preserved. Some of the plants may make so much growth as to be necessary to re-pot them during the first season. In such case place them into pots the next size larger, taking care not to break the young roots. As a rule one re-potting a year should be sufficient.

Place the plants in a cold house, giving little if any heat the first year, being allowed to commence growth at their own time. If the plants are plunged they require very little attention as to watering. When the buds begin to swell prune the plants back to strong eyes and syringe in dry weather. After blooming, about the end of June, they can be put out of doors in a sunny situation.

Ripening. When they have grown good shoots stop further growth by letting the roots become gradually dry, not, however, to the extent of being dust dry; for this also they need not be plunged. For securing extra large plants the growth would need to continue by keeping plunged and the roots moist. Still for early spring blooming the ripening must be attended to in good time, not later probably than August. The longer the plants remain outside the better, as the cold nights, dews and sunshine help to ripen the wood and produce buds for fine blooms.

Before hard weather sets in, the plants should be given the shelter of a frame, coming into heat whenever desirable, after being thoroughly ripened and may be flowered successfully. By heat is meant the ordinary temperature of a greenhouse. When brought in they may be pruned, and not be given more water than is really required until the buds and leaves begin to form. At this time the top soil should be taken off and replaced with fresh.

After the plants have bloomed all that require it should be carefully re-potted, plunged outside as before, keeping the leaves moist to enable the roots to get a start in the new soil.

Pruning. To this rule I adhere, "The more you remove from a Rose tree, the finer the blooms will be." With H. P.'s I advise that all the branches be cut back to, at most, three eyes, and

the result will be generally one or two strong shoots from each branch. This system will save an immense amount of tying work.

With the long and coarse-growing Teas, the Dijon section, and Marechal Niel, this short-pruning system will not answer; these, blooming on laterals thrown out from last season's wood, must have some of the branches left long, simply removing the unripe and weak tops. But the dwarf-growing Teas I shorten back to about two eyes on each shoot. I have probably 200 standard Teas in pots; some of them this year were cut back hard, while others only had the weak and old wood taken out. In the one case I have weak foliage and small blooms; in the other strong vigorous shoots, grand foliage and magnificent blooms. The moral is obvious.

Watering and Drainage. Though growing Roses in pots is made up of a number of small matters, I really think that of watering is the most important; and I think it is the point in which discretion is most called into play. If a plant is newly potted, or is without leaves, or if there is no growth going on, a less quantity of water is wanted. If the pot is full of roots and the plant growing, we may give water freely. But rather too little water than too much. Too little water causes drooping of leaves, though it is not wise to allow matters to go so far. With too much water and the leaves turning yellow the soil in the pot has become quite sour. The infallible rule for all is the knuckle applied smartly to the side of the pot; if it ring out bell-like, water is wanted, if it sounds dull and solid no more is necessary.

I think the two greatest enemies to Roses in pots are want of drainage and sour soil. Perhaps the one is the cause of the other. The roots of plants will have nothing to do with any portion of the soil which has become sour. There are several points, the neglect of which may lead to sour soil. One is potting or re-potting a plant into too large a pot; another is over-watering; still another is potting the plant in soil or compost which is too close and binding. One more reason is that many amateurs when they are not certain that a plant requires water press their fingers on the surface of the soil; the result is that the soil becomes like a cake. Now you may think this is rather inconsistent, as I advise you in potting your plants to ram them as hard as possible. No matter how hard you press your soil down with the potting stick, there will still be crevices where the water can filter through.

Hybrid Perpetuals. So far, most of my remarks apply more to the Tea Roses than to the Hybrid Perpetuals. I certainly consider it a waste of time to grow these latter in pots, for various reasons. One is, because we can grow them better and with less attention in the open ground; another is, that while we can take one crop of blooms from the Hybrid Perpetuals we are not likely to get another for some time. Then again, the Teas stand more knocking about, that is, they do not want so much rest, and they may be made to bloom more surely at certain times.

Take the grand old Tea Rose *Niphetos*, or the almost equally useful and beautiful *Caroline Kuster*; one can get from four to six (may be more) crops of bloom from these Roses in one season. I know of no Hybrid Perpetual that will stand this sort of work. However, if we must have Hybrid Perpetuals in the house, after they have bloomed once they are best outside, as they take up too much room and attention inside. If they make a good growth, equivalent to the spring growth of plants in the open, that is all that is necessary; this is the wood we want for blooms next season. If we dry them off, small blooms will probably form during the summer, which should be pinched off.

Manures. These are only of advantage when the plant is in a fit state to absorb them. Stimulants to a weak plant are poison. A plant in the compost described needs very little else until the roots have filled the pot. Then, if the flower buds are formed, weak liquid manure may be administered, but give too little rather than too much. Weak and often is better than strong and seldom. This liquid, whether it be made of horse or cow dung or sewage, and these are the usual materials employed, should be light in color when applied to the plants.

We may keep Roses strong and healthy for a long time by the use of stimulants and patent manures. They are bone, bone dust, dissolved bones and other concentrated preparations. These should be put on the surface, or mixed with the soil we top-dress with, when the plant is in growth, not when it is at rest.

Mildew. This is often the ruin of crops under glass. An attack may be brought on by opening a ventilator and letting the cold wind in for a few minutes. When we can command hot pipes the remedy is simple. This is to paint said pipes with sulphur made into a paste, but do not have too much fire on at the time you apply it. In cold houses we must keep it away by using when we syringe, a little softsoap at the rate of half an ounce to the gallon. The best way to prepare this is to mix two pounds of softsoap with boiling water, adding at the same time a wineglassful of petroleum, making up the quantity with hot water to five gallons. If a little Tobacco juice be added all the worse for the green fly. When we syringe put half a pint of this mixture into a large can of water.

Best Varieties. Noisettes—Marechal Niel and Madame Caroline Kuster. The very best varieties of Hybrid Perpetuals I know of for pot work are: Alfred Colomb, *Baroness Rothschild, Beauty of Waltham, Boule de Neige, Captain Christy, Charles Lefebvre, Dr. Andry, Dupuy Jamain, Edward Morren, Henri Schultheis, John Hopper, *La France, Madame Lacharme, Madame G. Luizet, Madame V. Verdier, *Marie Baumann, *Marquise de Castellane, *Merveille de Lyon, *Senateur Vaisse and Souvenir de Malmaison. The best six are perhaps those marked *. Almost all the leading varieties of Teas give good results in pots. I will just name the very best: Anna Ollivier, The Bride, Catherine Mermet, Madame Charles, Madame Falcot, Madame Lambard, Madame Willermoz, Marie Van Houtte, Niphetos, Rubens, Souvenir d'Elise, Souvenir d'un Ami and Sunset.

The Fruits for Wisconsin.

[*Geo. J. Kellogg, Janesville, Wis., before the Wisconsin State Society.*]

Fruit Trees. You can grow Apples just as well as you can grow colts, if you exercise the same common sense and give the necessary care. You must select a northern slope, on soil good enough for Corn, procure your trees from a reliable source, get those kinds that have done the best for the past twenty years, and the varieties that have been tried and promise to pay; plant them in early spring and mulch thoroughly.

At planting, prune the tree in shape; select one central branch for the trunk, cut out all crotching limbs nearer than six inches to each other; plant the orchard to Corn or Potatoes, and cease cultivating on the first of July. Do not stimulate too great or too late growth; if there is a tendency that way, seed to Clover. Protect your trees by shading the bodies, from the day of planting, by a wisp of marsh hay, brown building paper, newspaper or two boards set on the south side. Shade to protect from borers and the heat of the sun, both summer and winter.

When the orchard comes into bearing, do not rob the ground—return all the hay as a mulch, or use its equivalent in wood ashes and stable manure, to keep up a little growth of new wood every year. It may be necessary to cultivate the orchard till July and then sow to buckwheat. To protect from mice, mound fresh earth around each tree in November about the size of a water pail—remove in spring. Pay the boys twenty cents apiece for all the rabbits. If mice have girdled your trees, put fresh earth about the trees early in spring and keep it there; nine times out of ten, new bark will form and save the tree.

The best varieties of Apples to plant are the Yellow Transparent, Duchess of Oldenburg, Tetofski, Haas, Fameuse, Wealthy, St. Lawrence, Red Astrachan, Wolf River, McMahan, Talman Sweet, N. W. Greening, Golden Russet, Willow Twig, Longfield and Antonooka.

Pears grown in Central Wisconsin, north or south, cost $10 each. Although Flemish Beauty is hardy enough it blights, except occasionally on poor clay soil, when it gets to bearing. Plums can be raised if you plant the best natives and usually two or more kinds near together.

Of small fruits there is no end. The best Strawberries are Crescent and Wilson of the old varieties, but if you want something to cut with a carving knife, set Jessie and Bubach. Never set all Pistillates. Of red Raspberries, plant Turner and Cuthbert for field culture. Shaffer and Purple Cane for gardens. Black Raspberries, Tyler and Gregg. Dewberries, Lucretia. Blackberries, Snyder, Stone's Hardy and Briton. Grapes Moore's Early, Worden, Concord and Janesville for black, Brighton and Delaware for red, Niagara, Lady and Empire State for white.

These are the fruits you can grow if you mix brains, common sense, muscle and manure in the right proportion. The smaller the tree set, the greater the certainty of a healthy orchard. All it needs is care and culture. Be sure of the right kinds. Don't try to renew an old orchard by setting a tree where one has died out; it needs a wagon load of fresh earth if you attempt it—better plant a new orchard.

The fruits you cannot grow are the varieties you usually buy of the travelling tramps. You can't grow even good varieties on a poor location on a south side-hill, with malformed tops, no protection, cattle to prune, hogs to rub, insects to eat, borers and bugs, rabbits and mice. You must give an Apple tree as much care as a calf—then you may reasonably expect something in return. You cannot grow Pears west of the lake shore belt. You cannot grow the choice Plums or Cherries. You cannot go to a neighbors Strawberry bed and get good plants that will succeed. Ten to one you would get all pistillate plants, and an acre would be worthless. From 100 plants set forming matted rows, I have known 500 quarts of nice fruit taken the following year. You cannot grow Cuthbert Raspberries or any variety of Blackberries without winter protection. You cannot succeed with any Grape unless you give it care, pruning and winter protection. You cannot have a good fruit garden under shade, without fences and on poor soil. You must pile on the manure and work it in. Plant long rows, work the plow, and hill with the horse. Hoe the Strawberry bed and the fruit garden every Monday morning, just as sure as your wife does her washing, and keep it up as long as weeds grow. You cannot grow Strawberries and white grubs together. Plant after Corn or Potatoes, and see that the manure is free of the pest.

Fruit Garden. Every farmer needs an acre of his best land for the fruit garden. Every family needs, for health and enjoyment, two bushels of Strawberries, one bushel of Raspberries, two bushels of Blackberries, 120 lbs. of Grapes, ten bushels of Apples and ten quart jars of canned fruit, for each member of the household, hired man and baby, each and every year. If the lord of the house won't plant and tend the garden, let him furnish the wife and children the land in good condition, the plants or the money to buy the plants, and agree to pay the wife and children ten cents a quart for all the fruit raised for ten years, and I will be satisfied with the results.

If the season should be dry, at or soon after planting, sink a small tin can with small holes in the side and bottom, beside each plant or occasionally in the bed, and keep filled with water.

Insects. The worst enemy in fruit culture is the Plum curculio. Jar him down for the chickens or catch him on sheets. Poison will destroy all others. If you plant Currants, use white hellebore when the worms first appear. For leaf-eating insects, spray with Paris green or arsenic water just after blossoming, for codlin moth and leaf rollers, and for canker worms as soon as they appear. For Strawberry insects, mow and burn the beds immediately after fruiting, when a brisk breeze is blowing. To protect Grapes from birds, insects and mildew, bag them as soon as the fruit is set.

Winter Protection. It is necessary for Cuthbert Red Raspberries, Dewberries and Blackberries, which are easily covered by loosening the earth about the plants and pressing them down by bending in the root, bending all up or down the row; cover with earth and in the spring remove and tie to a wire two feet above the row. Dewberries and Strawberries should be covered with marsh hay or cut Corn stalks, just so you can't see the vines or plants. Remove from the Dewberries, and leave all on the Strawberries, opening when they can't get through, in the spring. Hand weed when necessary before fruiting. After fruiting, cultivate the Strawberries down to about a foot in width and keep clean for another year. Set a new bed yearly and keep clean, no matter about the old one.

Black Knot—Cause and Remedy.

[*Prof. Chas. H. Peck, New York State Botanist, before the Farmers' Institute, Ballston.*]

"Black knot" on Plum and Cherry trees, weakens the trees, and if neglected finally kills them. The disease is peculiar to this country, as a native of our wild Plum and Cherry trees. I have never seen it on the lit-

tle sand Cherry. All cultivated trees are not equally liable to be attacked. I have never seen the varieties of the Ox Heart or English Cherry affected by it, but the varieties of the sour Cherry are especially liable to its attacks. A thrifty, healthy tree is less liable to attack than a sickly neglected one.

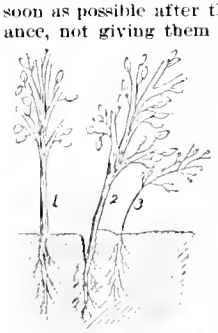
The disease first shows itself in the form of a swelling in the branch. The enlargement is limited to the sap wood, the heart wood remaining unaffected. The branch is sometimes curved or contorted by the knot. Some have affirmed that there are two distinct kinds of black knot. But it is a mistake. The different appearances are due to the different stages of development, or to differences in the host plant.

Cause of Black Knot. Recent investigations and microscopical examinations have shown that fungus alone is the cause of the mischief. Its spores lodge upon the branches of the tree, and under favorable conditions of heat and moisture germinate, and their germinal threads, called mycelium, penetrate the tissues of the sapwood, and produce a kind of irritation which results in an enlargement of the branch and the development of the successive stages of the fungus, as already described. Insects sometimes found in the black knot do not cause the knots, but seek them as a fit place for depositing its eggs and rearing its young.

Propagation. As to mode of propagation the microscopes reveal that the olive-green mold which first appears bears a crop of fungus seeds or spores. After the summer spores have been produced, minute black spheres make their appearance. In autumn they are filled with a mass of cellular matter, intermingled with a few immature elongated membranous sacks, but no spores. In winter, or in early spring, we fine numerous well-developed sacks, each of which contains eight spores, usually arranged like beans. These are the winter spores, ready with the opening of the season, to be scattered abroad by the winds. They may be wafted long distances.

The fungus has also another method of propagating itself. The mycelium, or filaments in the knot may extend from it in either direction, so long as the branch is alive, and thus new knots are produced by it each season. Commonly, the disease, if left to itself, continues to spread in the branches until the life of a tree is destroyed.

Remedy. Evidently the most natural and effective remedy is simply to cut off the excrescences and as the mycelium is deep-seated the cut should extend three or four inches below the knot. Sometimes a knot may occupy but one side of a large branch, which it may be desirable to save. In such case shave off the knot, taking with it the surrounding sap wood, for the purpose of getting all the mycelium possible. [Then paint the wound with clear turpentine first and in the case of very large wounds, with paint, varnish or grafting wax, as a protection from exposure to the atmosphere.—Ed.] When a tree is entirely surrounded by a black knot below the branches, it may as well be taken out at once. When the knots have been cut off, burn them immediately. The knots should be removed as soon as possible after they make their appearance, not giving them time to perfect a crop of spores. Except perhaps if a tree is first seen to be affected when in full leaf, so that the removal would cause serious injury to the tree, it might be better to wait till the leaves have fallen. In this way the development of the crop of winter spores will be prevented, and so much will be accomplished in preventing the spread of the disease. Each grower should attend to this business faithfully and thoroughly. *Let no black knots remain on the trees during the winter.* In most localities the danger of infection from wild trees has been reduced to almost a minimum by the thorough clearing up of the country. The danger of infection is also greatly diminished by giving good cultivation and sufficient nourishment to the tree. It is evident then that black knot is no insurmountable obstacle, merely making necessary some extra care and attention, which will be abundantly rewarded by good crops of Plums, and Cherries in due time.



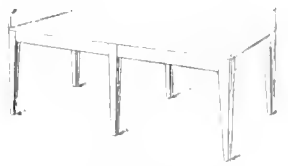
Planting Small or Large Seedlings.

CONDENSED GLEANINGS.

Forest Trees from Seeds. We sow all our tree seeds in spring, and as the following rules are based on our own experience, they apply to spring sowing: White Ash seeds ripen in early October, and fall after the first severe frost. They should be mixed with moist sand and not allowed to become dry before sowing. This same treatment should be followed with all the native Ash family, with one exception, viz, the Green Ash, which hangs on longer, and will germinate if sown dry; all others will remain dormant until the next season if sown dry. Hard Maple seeds ripen early in October, and require the same treatment as the White Ash. Soft Maple seeds ripen in spring immediately before, or about the time that Apple trees begin to blossom. They should be sown within a few days after having been gathered. Elm seeds ripen in spring, and they require the same treatment as those of the Soft Maple. Black Walnuts and all nuts with a pulpy covering may be spread in thin layers, say six inches deep, and covered with sods and litter to prevent them dying during the winter, in which case the pulpy covering will be easily disposed of in spring. Other Nuts and Acorns, together with seeds of the Tulip Tree and Basswood, are more safely treated as recommended for Ash and Hard Maple seeds. Catalpa and Ailanthus seeds are kept dry during winter and sown rather late in spring. Birch and Alder seeds are kept dry and sown dry early in spring. Locust seeds and all those of that family are kept dry through the winter and soaked in hot water immediately before sowing. All seeds with a fleshy covering, such as Apple, Cherry, Mountain Ash, Cucumber Tree, Buffalo Berry, Red Cedar, and Holly, are washed free from the pulp, mixed with sand, and sown in spring. We make an exception generally with the Red Cedar and the Holly, as they never germinate evenly in the spring; therefore, we bury them in a rot heap during two winters and one summer, and sow the following spring. Poplar and Willow seeds are very fine and delicate and require skill, close attention, and continual moisture during the early part of the season. Therefore it is cheaper and surer to raise them from clippings than from seeds. All seeds mixed with sand must be placed so that water will not stand around them. Frost will not injure them, unless in position where they will freeze dry. A cool shed where they are protected from sun and wind will be a proper place.—R. Douglas, in Garden and Forest.

A New Cabbage—The Shantung (Brassica chinensis, L.) Mr. George Hughes, late Commissioner of Customs at Chefoo, China, offered the Royal Gardens seeds of this Cabbage, and stated: "I have just received from Chefoo, North China, a small packet of Shantung Cabbage seed. It grows in the north of China, is Lettuce-shaped, and weighs from five to eight pounds. When boiled it is nearly as good as Seakale; eaten raw, in a salad, it is of so delicate a flavor that I know of no vegetable in England to approach it. It is an autumn Cabbage, should be planted about 18 inches apart, thrives best with moisture, and in Shantung is well watered every day; there the seed is sown in June. When nearly full grown it should be tied round, so as to give it a good white heart. If it can be acclimatized in this country it will be a great addition to our vegetables." The seeds received at Kew, being few in number, were carefully cultivated. They were sown in a heated pit on May 3, and in about a fortnight all had germinated. They were sown in a heated pit on May 3, and in about a fortnight all had germinated. They were pricked off into boxes, and when large enough transferred to pots. They were kept in a cold frame until the beginning of June, when they were planted out in beds of rich soil about 18 inches apart in the rows, and the same distance apart from row to row. About the middle of July the plants were tied up in the same way as Cos Lettuce, and when well filled and blanched were cut for use. They were pronounced to be excellent. The seed ripened only sparingly, probably owing to the dry weather of last summer. It is possible that this Chinese Cabbage may prove a useful addition to English gardens.—Gardener's Chronicle.

Planting Small or Large Seedlings. There is a belief among tree planters that by securing and planting a seedling from two to three feet high they will obtain a larger percentage of growth and a gain of a year's time on the size of their tree. This is a reasonable presumption, yet we beg leave to present another side of the question; our Western winds. The above illustration shows three seedlings, No. 1 being a 30 inch tree, strong, stocky and well rooted. The same tree, at No. 2, has just been struck by a gale, and in its stiff, unbending way is pressing the soil away from its base, and at the same time opening a cavity down along the root on the windward side, into which the dry top soil is sifting. The wind dies down and the elastic root straightens the tree up into an erect position, and dry soil falls in at the other side. This is


A Portable Potting Bench.

often repeated and the dry air and soil at length kill the tree. The seedling shown at No. 3 is 12 inches above the collar where the root and trunk meet. It is also being bent by the wind, but its large proportion of root allows it to bend nearly to the ground without disturbing the roots, and no soil gets down among them, thus conducing to permanent root growth; and any condition such as above illustrated to be carefully avoided. With small numbers, large trees can be carefully braced; but in setting trees by the thousand of course this is impracticable.—Western Tree Planter.

How to Grow Kale. This vegetable belongs to the Cabbage family, though, as a class, they form neither heads or eatable flowers. They are very hardy and are propagated from the seeds, which resemble the seed of Cabbage. The seed is sown at the same time as the seeds of Cabbage or Cauliflower, and in the same way. Early plants may be started in a hot-bed. In transplanting, treat the plants like young Cabbages. While freezing does them no harm, they are generally harvested in the fall before the closing up of the ground. If reset in the following spring, they will furnish an abundance of tender sprouts which, when cooked, some think are better in flavor than Cabbage. In preparing, selecting and manuring the ground, proceed precisely as with Cabbage. It is subject to the same insect enemies, and to exterminate they are to be treated in the same way as when they attack the latter.—Western Rural.

Potting Bench. The great convenience of a portable potting bench when lifting plants from open ground does not seem to be thoroughly understood by many florists. We give an illustration of a convenient bench which can be taken into the plat where plants are being lifted. By its use plants may be potted right on the spot, and the chances of the root being long exposed to the air, greatly diminished. It is very often the case where plants are lifted in the field and carried to the houses before being potted, that the vitality of the plant is greatly reduced by drying of the roots, which by this means can be avoided. Careful attention to these little points go far towards making the best success in plant growing.—American Florist.

Hoosac Thornless Blackberry. Notwithstanding the severe cold which killed the fruit buds on all Peach trees, not a cane of this berry was injured, though no protection was afforded them. During the latter part of last August a prodigious crop was harvested and sold in the Lowell market for as high a price as the others brought. No blood was drawn or garments rent in picking the fruit. Cultivated in fairly well dressed and moist soil, the berry is of medium size, and for fine flavor must be quite ripe, when they are as good as the best.—N. E. Homestead.

Wealth in Onions. The great Onion-producing belt of this state at present is a tract of seven hundred or eight hundred acres, know as the Chester meadows. This tract lies on either side of the Erie Railway track, between Greycourt and Chester. When the railroad was built through that part of Orange county, the tract was a swampy waste, into which thousands of tons of earth had to be dumped, and two miles of piling driven, before a foundation for the road-bed could be made. It was not believed that it could ever be utilized in any way, and the payment of taxes on it was considered as a waste of money. About thirty years ago a farmer named Conklin, who owned a large portion of the tract, drained a spot in one corner of it and was rewarded with a plot of the richest kind of soil. By way of experiment, he seeded it to

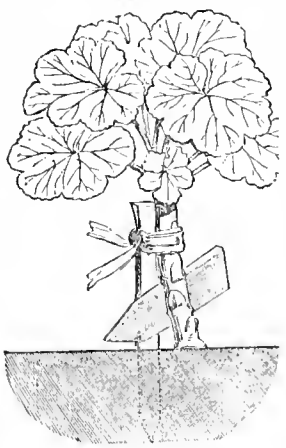
Onions, and gathered a most unheard-of crop. This led to the drainage of the entire swamp, and there is not now an acre that is not regarded cheap at $600. From 150,000 to 200,000 bushels of Onions are raised annually.—New York Herald.

The Cabbage-worm Worsted. I would not pay a man twenty-five cents for keeping every single, solitary worm off a hundred heads of Cabbage, since it can be done for less than five cents. By walking along the rows, every week or two, buhach-bellows in hand, and giving each head a single whiff of the fresh, unadulterated, death-dealing powder. This is sure death to the Cabbage worm, and, in fact, to almost all Caterpillars. The California buhach is so uniformly good that it is best to take no risks with the imported article. Use in dust form, mixed with about five times its bulk of flour. To apply it in a spray, mix a quantity with hot water to a paste, then reduce with water, a tablespoonful to a gallon.—Farm and Fireside.

Dealing With Black Knot. A certain scientific writer, whose name need not be mentioned, recommends waiting till the leaves fall in autumn before cuttiug out the black knot from the Plum trees, so that the knots may be easily seen. This is bad advice. We find no difficulty in keeping Plum orchards clear by promptly cutting out or cutting off every vestige of the disease as soon as it appears. Success accompanies promptness. A very successful fruit-grower, who raises heavy crops of fine Plums, gives a standing order to his men, that whenever they happen to see a black knot first making its appearance, to drop everything else and remove it.—New England Farmer.

Propagating Tricolor Geraniums. If cuttings are inserted in the usual way many often rot, to avoid which, the plan herewith illustrated can be followed: First tie the cuttings to a short stick, then insert a splinter between the stick and cuttings to keep them apart. The upright stick is thrust down into the soil so that the base of the cutting barely touches the surface of the soil. The roots are thrown out from the base, and as the cutting begins to grow it must be carefully potted in sandy soil in thumb pots, and put in a warm place near the glass to encourage thrifty growth.—The Amateurs' Conservatory.

Tomato worms are never very numerous, and hand-picking is the best way to manage them. In spite of the horn at the tail-end, they can neither sting nor bite. Frequently one will be found with its body nearly covered with small egg-shaped white cocoons containing parasites, though often mistaken for eggs. Worms with these should not be destroyed, as they are too weak to domuch damage, and the parasitic insects should have time to leave these cocoons, being friends to be encouraged. —Amer. Farmer.



Propagating Tricolor Geraniums.

The Siberian Apricot. This species is by far the hardiest form against the cold of winter as well as against spring frosts. A temperature not exceeding 30° below zero hardly harms it at all, although 40 kills it to the snow line. As all plants sent out seem to be seedlings, pains ought to be taken to select the hardiest and most productive for propagation. We shall then have an Apricot growing with success (probably with profit) on the Atlantic slope, and as far north as most Plums.—Rural New Yorker.

A Mechanical Scarecrow. This new invention represents a figure standing with gun in hand. The arm holding the gun is made to move by clockwork, inclosed in a box at its feet; at a proper elevation it discharges itself. Then the arm lowers. The mechanism is regulated at pleasure, and requires a daily winding.—Rural Home.

Russian Mulberries. This tree from the far north possesses a greater power of resisting cold than any other known form of Mulberry. But, as with the Siberian Apricot, it has almost infinite variations. As for fruit, not one in ten produces a good kind; and there is also great choice as to vigor and beauty of foliage.—Rural New Yorker.

Spanish Chestnut Hardy. The Spanish Chestnut is but little less hardy than the English Walnut. Both while young lose the tips of their branches in winter. Of both the Spanish Chestnut and the English Walnut there are many large trees about Philadelphia, bearing fruit every season.—Garden and Forest.

Value of Cottonwood Trees for Shade. The Cottonwood grows quickly and makes a pretty tree, but it grows most too high for a good shade. Still it will serve the purpose, and is a good deal better than no tree at all.—Western Rural.

From Bush to Pie. Sparrows were selling in this city last week at fifty cents, while yesterday they were one dollar per hundred. Sparrow pie and sparrow on toast are gradually becoming a luxury.—Albany Post.

To Whitewash Quickly, Make a bucket of rather thin whitewash and apply it with a hand force-pump. Coal oil also can be forced into every crack and crevice with such means,—Farm and Fireside.

The White Daisy Pest. A peculiarity of this plant is that it will not overrun rich soil. By top dressing the meadows liberally, or by raising grain the Daisies are "run out."—Husbandman.

Right time for Everything. The time to kill Burdocks is when the burrs are partly developed, but not ripe, and the way is to cut the stalk off at the ground. —Hosbandman.

Above all Else. A well sustained reputation for reliability. It beats the profits on small cheating "all hollow."—Drovers' Journal.

Tomato Training. We believe the stalking plan to be the better one.—Florida Fruit Grower.

Vegetable Products on the Table.

Beet Pudding. One pound of boiled and mashed Beets, one quart of flour, one-half pound of suet, one-half pound of Raisins, one-half pound of Currants, one-quarter pound of Citron. Mix stiff and steam three hours. Serve with wine sauce.—Mirror and Farmer.

Cooking Vegetables. In cooking Beets and Peas the water should not be thrown away when they are done, but should be boiled away until there is not a spoonful left, care being taken not to burn the vegetables, they will be found to be much sweeter and better flavored.—E. W. L.

Boiling Sweet Corn. Put the Corn in cold water, set on back of stove where it will get warm, for half an hour, then heat gradually until it boils, cooking in twenty minutes. Corn cut from the ear may be treated the same, then seasoned with salt, butter and milk to suit.—E. W. L.

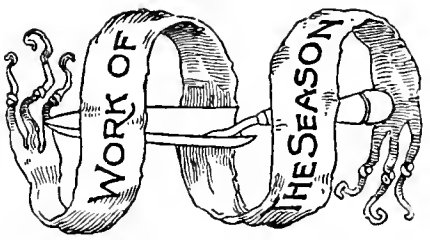
Peach Pie. Line the plate with crust and fill with quartered Peaches; to a common-size plate allow two heaping teaspoonfuls of sugar and a few bits of butter, cut the upper crust a little larger than the plate; raise the under crust with the blade of a knife and place under it; bake in a moderate oven.

Fried Cucumbers. Remove skin, slice Cucumbers lengthwise into thick pieces and lay in cold water half an hour, wipe dry, dip in beaten egg, then in fine cracker crumbs, season with salt and pepper and fry in lard; drain dry and serve hot. If liked, squeeze a few drops of lemon juice on the slices.—Detroit Free Press.

Peach Mangoes. Take large, firm Peaches; wipe them with a damp cloth to remove the bloom; halve and take out the stones; fill with three parts of Horse-radish and one of white Mustard seed. Tie the halves securely together, and place in a jar; pour boiling vinegar syrup over them.—Country Gentleman.

Vegetable Marrow. Pare the Marrow, divide and entirely take away the soft part inside. The Marrow may be cut into four equal pieces or cut into slices—slices cook more quickly. Put into the oven a roasting-tin containing about one-quarter pound of butter; let the butter brown nicely; then put in the Marrow and bake until soft and nicely browned. While cooking, this must be well basted with butter.—English Paper.

Pickled Onions. Peel and slice large Onions, and sprinkle them with salt. To every peck take about six capsicums, slicing only a part; add some pepper, cloves, and allspice whole. Put the Onions into jars, distribute the spices pretty equally among them, fill up the jars with vinegar, and set them in a pan of cold water over the fire, taking care that they are tightly tied down. In about one hour and a half they will be done.—English Farm and Home.



HOUSE PLANTS.

Agapanthus. The flowering season over, cut down half way, to prevent seeding. Give good treatment to promote growth for a month longer, then dry partly off, keeping in a light place free of frost until spring.

Annuals, like Asters, Balsams, Chinese Pinks, etc., in good shape, may be lifted for enlivening the window during the coming season of floral dearth.

Azaleas and other hard wooded plants to be sheltered in an out-house or veranda from chills, for a month longer before bringing into the house.

Begonias. Dig tuberous ones at the time of frosts, dry the bulbs thoroughly and winter in dry sand. Weltoniensis during active growth is helped by an occasional watering with liquid manure.

Cactuses summered in the border to be lifted before fall rains set in, potted and moved into the dry.

Carnations to be taken up towards the end of the month, treating as directed under "Lifting."

Chrysanthemums. See "Plants Under Glass."

Cytisus. Lift bedded plants; bring on with careful treatment in pots, for promoting heavy spring bloom.

Jasminum grandiflorum from this time on will be benefited by a weekly application of manure water.

Jerosalem Cherry. To be taken up and potted as directed under "Lifting." The plants make a good show from being covered with their scarlet fruit for a long period. Give an abundant supply of water.

Lifting from the beds for fall and winter use or stock plants calls for activity; kinds that have bloomed all summer require to be severely cut back, while such as have been grown during the summer for winter bloom, by being kept from flowering need no further pinching. Work with much care to retain all the roots, lift a large ball of earth with the spade, and reducing it for the pot by the use of a pointed stick. Have pots from four to eight inches across on hand, using them as small as can be fairly employed. Work good soil firmly between the ball of earth and the pots. After potting, water well, set closely together in the shade for a week, sprinkling the foliage lightly half a dozen times daily; afterwards increase on space and light, but not getting into full sunlight yet for two weeks.

Oxalis started into growth now will make excellent window plants, especially such varieties as floribunda, Bowerl, lutea, etc.

Primroses. See under "Plants Under Glass."

Roses for winter, to be re-potted, if this has not already been done and border plants to be lifted. The best soil: old fibrous sods, finely divided but not sifted, with a third part well-decayed manure.

Verbenas. If to be kept over, use young plants propagated from tender shoots after the 15th.

LAWN AND FLOWER GARDEN.

Evergreens which require pruning that was overlooked earlier in the season may yet be thinned, though it is stated that the exposed portions are very apt to be injured when pruning is performed in late autumn or during winter. In the late summer the resin exudes and prevents hurtful exposure to the air. The lack of nourishment in the soil more than anything else causes so many poor Evergreen specimens to be seen. No one except those who have annually invigorated their trees with well rotted manure, can form any idea of the change it will cause in the stronger growth and intensity of color.

Everlastings. Gather before open; dry in shade. This class of ornamentals is the better for being cut when the flowers are about half open.

Forget-me-nots. By dividing early in the month they become so well established before winter as to stand a good deal of plant-trying conditions in the way of freezing and thawing.

Frosts now threaten. Anticipate on cool nights by covering tender things to preserve their beauty for the days of fine weather that so often follow.

Gladiolus Removing the flower stalks before seed, goes on to ripening is of advantage in the development of bulbs.

Hardy Bulbs. Planting of Hyacinths, Tulips, Crocuses and the like may begin. Tulips for fine effect to be set at five inches apart, Hyacinths seven, and smaller sized bulbs, like the Crocus and Snowdrop, at two or three inches each way. A depth of four inches will suit the smaller bulbs, of six inches for larger ones. Narcissos, Crocus and Snowdrop are well suited for close clumps by themselves. Beds ought to be prepared and lay some days before planting. Rotten cow dung is one of the best fertilizers for bulbs.

Labeling plants like Dahlias, Gladioluses and such others as require it can better be done before frosts cut them down.

Lawns. Mow regularly to end of the season. Trim verges of walks, beds, etc. Spud up weeds.

Lobelia cardinalis. This easily grown native plant is very attractive in a clump. The seeds are now ripe. Sow promptly. Old plants may be divided next month or in the spring.

Order trees, shrubs, hardy plants and bulbs to be set this fall. After the leaves are matured, say in October, the earlier the planting is done the better. Early orders ensure early delivery from nursery, with the probable result of getting better stock.

Perennials. Clumps of such kinds as Peony, Phlox, Iris, Lily of the Valley, Lilies, etc., having finished their growth for the season may be divided and re-set.

Tritomas. Watering with liquid manure helps the spikes of bloom a great deal.

Vases and hanging baskets if fairly protected through frost threatening nights may be kept attractive for some time.

Violets. Set in frames for fall or spring bloom.

Weeds. Some kinds (Chickweed for one) grow rapidly in the fall; continue to work against them.

PLANT CULTURE UNDER GLASS.

Acacias. The loss of both flowers and foliage will likely result from neglect in watering.

Begonias of all classes that are coming into bloom need a sunny situation, together with an occasional liberal supply of liquid manure.

Chrysanthemums. Bedded plants should be lifted, those in pots to receive a final shift promptly. All need plenty of water, and twice a week liquid manure, but not a drop of the latter to touch the leaves. Keep show plants staked and tied up for inducing shapliness. Kill the hairy or in fact all caterpillars.

Cinerarias. Keep in cool airy situation, to promote healthfulness and for getting into good flowering shape. See also in the July issue.

Dracenas requiring to be re-potted are better if attended to this month.

Fumigation. Before getting the stock into their winter quarters, give the houses a thorough fumigation with Tobacco, doing the same several times each week during the indoor season.

General Care. Heat-loving plants will call for some fire this month. As for the general run of greenhouse plants avoid fires as long as can be; when necessary start up briskly. Air freely. Green-fly, Thrips, etc., will appear; dispel by Tobacco smoke, by strewing Tobacco among the pots, or other effectual means.

Herbaceinums, as with most plants, when rapidly growing, quickly respond to liberal manure-watering.

Lifting. Read directions under "House Plants." Bouvardia, Carnations, Stevia, Violets, etc., are often lifted and bedded out in the plant houses. After planting keep the apartments close, shaded and frequently sprinkled for a week or more, afterwards increasing on light and air.

Orchids generally should have the moisture shortened as the days shorten. Too many growers keep them too damp and warm all winter. Begin a course of treatment preparing for a low winter temperature, and a near approach to dormancy.

Pot Plants moved out last spring to be returned before frosts injure them. Small sized ones may go in frames for a spell, protecting in bad weather.

Primulas. Remarks under Cinerarias apply, save that special care not to over-water must be heeded. Keep Double Whites shaded a month yet.

Propagation, looking to next season's stock, to be pushed now, it being better to depend largely on newly struck plants than on old ones for this. Commence with tender kinds, like Coleus, ending with the hardier greenhouse plants, Geraniums, Verbenas and the like. Whenever pot plants show young growth fit for cuttings put such in. Pot cuttings at the first sight of roots.

Syringe the newly planted houses once in a while, and give free ventilation in favorable weather.

FRUIT GARDEN AND ORCHARD.

Blackberries and Raspberries of tender proclivities, ought not to have a late growth encouraged by any further cultivation.

Borers to be dug out to the very end of their holes.

Budding of Peaches and Quinces to be finished. Look over early buds; if any did not take re bud, provided the bark will still raise.

Fall planting of all but stone fruit, is advisable. This should be done next month. Prepare the land now; if not practicable to plow and subsoil, trench with the spade. There should be good drainage, or else high-ridge plowing for the rows. Order the trees at once to ensure early delivery.

General. Thin late fruit. Clip away leaves or superfluous shoots that shade the fruit; sun is needed for best colors. Prop up heavily laden trees; stay spreading branches of such with rope or wire. Don't sow grain among your fruit trees.

Grapes to be gathered and packed by a careful hand, with a view to selecting only ripe clusters, preserving bloom (the most attractive quality), and removing all imperfect berries.

Pears. As soon as the color begins to change and the stem will part readily from the branch, the fruit is fit to pick; the ripening to be continued in doors.

Picking and Packing. When these things are carelessly done the returns from market must be poor, after all the trouble of raising fruit. To pick properly good ladders of different lengths are needed. Fruit ought to be mature when picked, but not approaching softness. Let it reach the retailer before it is in its best eating condition. Use new barrels for Apples, half barrels or crates for Pears, crates, baskets and boxes for Plums, Peaches and Grapes. In packages that are closed there must be gentle pressure to prevent the shaking of the fruit in transit. The way that the fruit opens at market is the crowning test of a successful grower and packer. For a near by market bushel baskets are often preferable to barrels. For evaporated fruit, neat, tasty packages go a long way towards making good sales.

Pruning of fruit trees can now be done and no "bleeding" or water sprouts starting from near the cut will follow, as often happens after spring pruning.

Raspberries. To plow earth against the rows adds new vigor to the plants, insuring better crops.

Snails often ascend trees after rains. A circle of fine, dry lime or ashes about the stem will prevent.

Strawberry and other fruit beds of present as well as spring setting must be kept scrupulously clear of weeds.

THE VEGETABLE GARDEN.

Asparagus. Remove the seed-bearing tops to prevent added plants from seed. For new beds fall planting answers, on sandy or well drained soil.

Beans. All garden varieties in a ripe state are much superior to White Field Beans for the table. Gather and dry immediately they are ripe. Secure late Green Beans before frosts, salting down the surplus for winter use. Select for seed the largest pods that are the lowest on the stem, or if some hills have been left for seed take only the best.

Cabbage seed for the earliest crop next year may be sown about the 15th, the plants to be wintered in cold frames. Transplant the seedlings into these, at 2 x 3 inches, November 1st. Clear off the early patches as the crops are gathered. Continue the cultivation of the fall crop.

Cauliflower. The directions for Cabbage apply.

Celery. July-set crops to receive their first "handling"—that is, compacting some soil against the base of the plants, to direct the growth upwards. Earth up earlier crops as directed last month. Pick the striped worms with lath tweezers and kill.

Corn. Drying for winter use is in order. Boil until the milk is set; cut from the cob; dry quickly. Save seed from the best hills in the patch.

Cress or Pepper-grass. A little patch may yet be sown. It matures rapidly; use while young.

Egg Plants. Shelter from frost. See last month.

Kale. For late autumn and winter this desirable greens can yet be sown, and then transplanted into well prepared and highly manured soil; or it may be sown very thinly in drills, and when about six inches high the largest leaves can begin to be used. Growth will continue more or less all winter.

Lettuce. For late fall crop treat as for Cabbage.

Melons will ripen better and more evenly for a wisp of straw under each one. Remove all late fruit that stands no chance of ripening.

Onions ought to be ready for harvesting, and are best placed in rows when pulled till the tops are well dried, then topped and left in piles for a thorough drying before storing for winter.

Peppers are injured by slight frost; secure in time.

Radish and Onion seed may be sown late to remain out all winter for early spring use.

Spinach. The Prickly or fall variety sown in drills one foot or 15 inches apart, in rich soil, during the first half of the month, will yield early spring "greens," rivaling the Asparagus in deliciousness. Thin to three inches apart before November. These thinnings may be gathered and used.

Squashes. The winter crops will be advancing rapidly now and until cool weather. Encourage rooting at the joints by not disturbing the vines.

Tomatoes. Protect a goodly number of the plants from early frosts, on which to have the good of the warm weather afterwards for a later crop.

Turnips. It pays to weed these. Thin out the young plants where they stand too close. Some of the early varieties may still be sown.

FRUITS AND VEGETABLES UNDER GLASS.

Cucumbers. Seeds started now will, in high heat, bear by January and later. Do not encourage much with stimulants at the start; air daily.

Grapery. In houses where the wood has ripened and the leaves begin to fall prune the vines and cleanse canes. Keep as cool as possible. A better time for washing or painting the inside wood work could not be had. Where fruit is not yet ripe, the night temperature should be about 55° to 60°, with a range of 10° or 15° higher by day. Keep the atmosphere rather dry when the fruit is ripe.

INQUIRIES AND REPLIES

P. S. & F. C. LETTER BOX

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such, give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

872. **Wood Ashes.** Will wood ashes injure a tree if put close to the trunk? W. W. B., *Toronto, Ont.*

873. **Peach Tree Pruning.** How much ought Peach trees to be cut back; the age of tree and time of year for best results?—E. P. C., *Grand Haven, Mich.*

874. **Blackberries Drying Before Ripe.** They are Snyders growing rankly near a row of Willows. The stalks are green for a foot or more from the ground. The season is not dry, and nothing seems to have stung them; were mostly covered with snow nearly all last winter. They have never been topped until this season. —G. S., *Kiaross, Iowa.*

875. **Hollyhocks Changing Color.** Is it a common occurrence for Hollyhocks to change their color after being planted several years?—Mrs. T. H. L., *Mitchell Co., Iowa.*

876. **Tomato Blight.** Of 3,000 plants I have lost 2,000. The leaves twist as from want of water, but plenty is supplied by irrigation. No insect can be seen on the roots, of which some seem healthy, others having made no growth. After setting a full crop the plants die. The country is new. Have had no such trouble previous to this year. I. F. C., *Durango, Col.*

877. **Rust on Raspberries.** Some of my Mammoth Cluster are covered with Orange rust. Is there any remedy?—H. E. H., *Avoca, Iowa.*

878. **Growing Sage for Market.** I would like information on raising this crop for market; whitening, best markets, etc.?—W. J. W., *Hillsboro, Ill.*

879. **Fertilizers for Shade Trees.** What commercial manure or chemicals can be applied to shade trees with safety? I can apply in liquid form the most conveniently.—T. E. W., *St. Louis, Mo.*

880. **Fall Sown Cabbage Seed.** What is the proper time to sow Cabbage seed this fall for early spring use? —H. A. B., *Blandford, Mass.*

881. **Nitrate of Soda in Lawns.** What benefit is derived from the application of nitrate of soda on the lawn? B. S. H., *Nashville, Penn.*

882. **Tomatoes.** Are the Mikado and Beefstake varieties early and reliable? Where can seed be obtained?—B. S. H.

883. **Gas Lime in Soil.** On a sandy soil some years ago there were about three inches of spent lime from gas works applied. Now the ground bakes badly. How can I remedy this?—J. M. D., *Columbia, S. C.*

884. **Green Roses.** Some green Roses came with others bought at an auction. I think they are colored. What can be done to restore their natural color? Mrs. S. C., *Short Hills, N. Y.*

885. **Potato Tops as Manure.** Are the Potato tops of any manurial value, if so, how can they be utilized? A READER.

886. **Celery Blight.** What is the cause, and is there any remedy?—V. A. B., *Afton, Iowa.*

887. **Apple Trees Dying.** Can any one give a remedy for a worm that this season worked in the pith of Apple trees, just as the new growth started, giving the tree a blighted appearance?

888. **Location for Fruit Growing.** Which is preferable a good fruit locality, with fair facilities for shipping, but no home market, or one where fruit does not succeed so well but with a good home demand. G. H., *Speerville, Kan.*

889. **Passion Vine and Wistaria over Winter.** How can I keep the Wistaria, Passion Vine, and Moon flower over winter?—Mrs. J. V., *Pembroke, Ont.*

890. **Nutmeg Melons Dying.** They had an early start in good soil, manure in the hill, and looked well until ready to run when they turned yellow and dried up. Some skin of the Vine is eaten, and the roots of others are affected by a small worm. Oil of Vitrol, saltpetre water, chloride of lime, etc., have not helped. D. F. P., *Lisbon, O.*

891. **Water Core in Apples.** Can any one tell the cause of water core in Apples. A SUBSCRIBER.

892. **Rose Bugs.** My roses were completely stripped of flowers and buds by this pest. The bushes were down and some buds have grown. Can I do anything to keep the bugs away? W. H. L., *Oakdale, N. Y.*

893. **Sowing Cherry Pits.** When is the best time for sowing Cherry pits, fall or spring. R. M. L., *Newport, R. I.*

894. **The Blue or Sour Gum Tree.** Can you tell me anything about the Blue Gum Tree or Sour Gum. Are they ornamental? A CONSTANT READER.

895. **Plum Grafts Failing.** Last April I grafted a number of Plums, but all died. I would like to know the cause as I was successful with Pears, Apples, etc., A. B. C., *Brownville, Mo.*

896. **Profits in Market Gardening.** Can any one state as to how much can be made per acre at market gardening, the expense per acre, capital required, etc.? Would land near a market at high rent be better than cheap land ten miles away?—C. R. G., *Wilmot, Ohio.*

897. **Yucas Hardy.** Are the Yuccas gloriosa and filamentosa hardy in Ohio?—M. A. C., *Columbus, Ohio.*

898. **Mulberries for Market.** Would it pay to engage in raising Mulberries as a market crop? What treatment suits them and the best variety?—C. E. S., *Jersey City, N. J.*

899. **Hop Worms Troubling.** Is there any remedy for a worm that has been doing considerable damage to our Hop crop?—N. C. T., *Hancock Co., Me.*

900. **Moving Grape Vines.** Will it pay to move a Grape vine over four years old? How should it be trimmed if moved?—C. H. B., *New York Co., N. Y.*

901. **Blistered Peach Leaves.** What is the trouble with Peach leaves I send? On certain trees the leaves are nearly all in this condition.—M. A. B., *Schoharie Co., N. Y.*

902. **Stocks from Cuttings.** Cannot plants be raised from cuttings of the best double ones? There are so few good doubles among seedlings.—FLOWER LOVER.

903. **Aquarium Management.** I would like to have instructions in keeping an aquarium. The water in mine, in which are several fish, gets unfit for use in three days, though about three quarts is replaced daily. In the bottom is a little sand and several large stone. Ought there to be plants in it? Are water slugs of any use?—NOVICE, *Henry Co., Mo.*

904. **Tan Mulch for Strawberries.** Tan from a tan-yard is recommended as a mulch for Strawberries. Can you give me any information as to its use?—M. C. T., *Niagara Co., N. Y.*

905. **Clematis Pruning.** Is it proper to cut Clematis back every year?

906. **White Clematis.** Are there any good white Clematis, that are hardy and free flowering?—G. D., *North Conway, N. H.*

907. **Thrips on Dahlias.** I have been greatly troubled with these pests. Is there any way of getting rid of them?—W. W., *Natchez, Miss.*

908. **Blanching Celery.** How is blanching Celery best done? Is anything gained by tying the leaves together before earthing?—F. H. W., *Arlington, Minn.*

909. **Bindweed.** What can be done to get rid of this weed; it has white Convolvulus-like flowers?—G. B. S., *Erie Co., N. Y.*

910. **Lilium Auratum Treatment.** After blooming in pots how is the Japan Lily to be treated for flowers next season?—C. P. V., *Hagerstown, Md.*

911. **Plantain and Weeds in Lawn.** Is there any effectual method of dealing with these but by digging out?—B. M. P., *Pittsfield, Mass.*

912. **Single Dahlias.** How are these cared for after lifting?—D. McL., *Oakland, Me.*

913. **Onions for Wintering.** Can anyone tell me whether there is any difference in the keeping qualities of large or small onions?—T. L. C., *Owenton, Ky.*

914. **Mulberries Fruiting.** It was recently stated that several Mulberries must be planted together in order to fruit. Would a Downing and Russian near each other answer?—O. O. C., *Fredonia, N. Y.*

915. **Lilies not Doing Well.** (*a*) They are planted among small Rhododendrons and are somewhat shaded. They do not bloom satisfactory. (*b*) Ought the bulblets to be detached each year. (*c*) How high should a Longiflorum grow before it blooms?—A CONSTANT READER, *Genesee Co., N. Y.*

916. **Lice on Chickens.** Have tried Kerosene, Sulphur, etc., without avail. What will destroy them?—T. D., *Bantam, Ct.*

917. **Canning Sugar Corn.** I would like to hear of a successful method of canning Sugar Corn?—H. S., *Cincinnati, O.*

918. **Hollyhock Propagation.** What method will keep them true in color?—F. F., *Harvard, Ill.*

919. **Callas.** Would some one inform me as to the best soil for Callas?—C. F.

920. **New Fruits.** Which may be considered the best way of introducing meritorious new varieties of fruits?—H. L. C., *Southbridge, Mass.*

921. **Delawares Not Fruiting.** My vines were raised from cuttings from various localities; the soil is good and growth thrifty. They flowered well but no fruit sets. Pruned and well cultivated. Other Grapes are near them. What is the trouble?—H. L. C.

922. **Trees Dying.** Horse Chestnut, Russian Mulberry, Apple, Pear, Plum, Cherry trees and some ornamental trees on my place after leaving out in the spring, suddenly lost their leaves and in several days died. It did not seem to matter whether they were mulched or cultivated, on high or low land, sandy or clay soil; those protected last winter were hurt as badly as those that were not. Has anyone else experienced similar trouble and is there any remedy?—J. C., *Eastham, Mass.*

923. **Blackcaps not Growing.** My soil is rich sandy loam, but for 6 years I have planted from 25 to 100 Blackcaps yearly, getting only two to grow and from these I would like to be told how to get new plants?—J. P., *Jackson Co., Wis.*

REPLIES TO INQUIRIES.

826. **Smut on Sweet Corn.** I know of no preventive. You might try a change of seed. My whole planting of the Corn was worthless this season on account of the smut, while other varieties growing along the outside were not touched with it. The first season I planted the Early Concord I had precisely the same experience. Next season I procured seed from another source, and have been perfectly free from the annoyance ever since.—C. E. P.

828. **Black Currants not Fruiting.** I would not prune them; the trouble is that they are too luxuriant in growth and pruning them as you suggest would only increase it. After the plants become older and do not grow so luxuriantly they will fruit freely.—C. E. P.

777. **Propagating Clematis.** We have found grafting to be the most expeditious way of increasing stock of Clematis. Good strong roots of C. Virginiana are obtained from the woods in fall used as stocks. Well ripened shoots with a dormant bud are taken and grafted on the roots anytime between November and February; potted and plunged in a warm greenhouse, with a hand-light placed over them and they will commence to grow at once. They must be carefully hardened off for planting out in Spring. Plants ten feet high and covered with flower buds were grafted last November.—E. O. ORPET.

865. **Grapes.** (*a, b*) Yes. (*c*) I do not know of any injury arising from the use of grafting wax on the vine. I have never found it practicable to use wax in Grape grafting as the sap starts immediately and the entire stub is moist, and wet wax will not adhere to it. Very often the sap flows out at the end of the cion five minutes after it has been placed on the stock. As the wax in all grafting is merely to exclude the air any material that will do it answers the purpose. In Grape grafting clay answers well, and where the sap flows freely you can use it dryer. It adheres well and keeps the air and moisture away.—HENRY LUTTS, *Youngstown, N. Y.*

632. **Curculio, When to Poison.** I would advise to begin spraying as soon as the fruit commences to form.—C. E. P.

849. **Manuring Raspberries.** The best time is in the fall.—D. N. L.

849. **Manuring Raspberries.** My preference is *when* I had the manure and time to apply it.

823. **Peaches and Grapes Together.** It would hardly be advisable to plant Grape vines between rows of Peach trees that are but twenty feet apart in the climate of Massachusetts. The Grape in the northern States needs the largest possible amount of sunshine to properly mature its fruit. Whatever interferes with the sunshine will be detrimental.—E. S. G.

826. **Smut on Sweet Corn.** Procure new seed that is not effected by smut, and plant on ground not recently devoted to the crop.

845. **Fly on Chrysanthemums.** Dip the plants in a strong decoction of Tobacco, made by pouring hot (not boiling) water upon a quantity of Tobacco leaves or stems.

869. **London Purple for Cabbage Worms.** It is a deadly poison and unsafe to use. Pure Pyrethrum powder dusted among the leaves by means of an atomizing bellows on a still day proves entirely effectual. The dose needs to be repeated as often as once a week. In the absence of the bellows the powder may be dusted on with the hand by separating the leaves with one hand and dusting in the powder with the thumb and finger. A perfectly pure and fresh article of the powder may be diluted with an equal bulk of air, slacked lime or flour if the mixture is allowed to stand in a tightly corked vessel a few hours before using.—E. S. GOFF.

839. **Datura Propagation.** Datura arborea alba is easily propagated by cuttings. Make these about six inches long, place them in a sandy soil and plunge in a bottom heat of about sixty degrees. Young shoots heeled off the old wood when they have grown about six inches long, in spring root freely.

883. **Barberry from Seed.** The Barberry is readily propagated by seed. Rub the ripe berries in sand and sow at once. Or wash out the seeds and put away in moist sand until wanted. It is best to sow them in the fall, or if the sowing is delayed until spring the seeds should be buried in a well drained place. Sow in a soil containing plenty of humus, and mulch with a very thin layer of moss.—E. S. G.

837. **Keeping Locusts from Sprouting.** There is no possible way to do this except by cutting them all down, sprouts and all, every one of them, between the first and fifteenth of August, and keeping them cut so close that they cannot form a leaf until winter sets in; and then if they show up the next spring the same careful work should be continued. The Black Locust (which suppose is meant) is a very pretty and valuable tree, but should never be planted, except in some rough place that we are willing to give up entirely to it, in any of the eastern States; for it makes itself a most fearful nuisance around buildings, fences and cultivated grounds. Here in California it is largely planted, grows finely and is well thought of. And does not seem to have the sprouting habit to any great extent (so far I have failed to see any sprouts at all), perhaps from the reason that all trees here root very deeply owing to no rains in the summer. But don't plant this tree East, or you or your successors will always regret the act, unless you can give it a corner entirely to itself.—D. B. W., *San Francisco, Cal.*

778. **Bark Lice on Apple.** Dissolve two pounds of potash in two gallons of water, and apply with a paint brush to all the infested parts, or better yet to all the stems and branches of the tree. This wash can be applied at any time, but it is best done in the spring before the buds start. One or two applications will be sufficient.—CHAS. E. PARNELL, *Queens Co., N. Y.*

725. **Currants Dropping.** The insects no doubt had affected the fruit before you used the hellebore, and the latter may have something to do with it. My Currants set poorly this year, but I attribute it to excessive wet while in bloom. It is very unusual for the fruit to drop.—S. M.

826. **Smut on Sweet Corn.** Smut in Corn is a mystery to all of us, and I know of no preventive. I see it on the same stalk with a perfect, healthy ear. I have some in my early Corn. I know of no way to avoid it unless to change your seed, and give your ground 50 bushels of lime to the acre. In the east, where we always limed our land every five or six years, I saw but very little of it, while here where we use no lime it is plenty every year when hot, wet weather comes about earing time.—S. M.

829. **Currants and Gooseberries** Plant your cuttings, or rather put them in any time after the first of September. Cover in the fall as soon as the ground begins to freeze. Your 20 year old orchard will be too much shade, and the trees will rob the young plants. Shade is entirely unnecessary in your latitude. Prepare your ground deep, make it rich, and when your plants get to bearing keep the ground well cultivated all summer, or mulch from July first.—S. M.

834. **The Gucii Plum.** I do not know, never having had this variety. Don't remember of ever seeing any notice of it.—S. M.

835. **Gooseberries for Market.** Houghton and Smith's Improved are the most profitable. Downing is larger and better, but does not bear so much as the others. Industry is a new English one, largest of all that promised big things, but I have seen that it is subject to mildew.—S. M.

859. **Cherry Sprouts.** The only plan is to plant them pretty deep, and never plow so as to cut the roots. They make a good stock to work on. The Mazzard and Mahaleb is the stock we use mostly, the latter never suckers at all.—S. M.

860. **Cherries for Market.** I have a Napoleon Bigarreu that has given me more returns than all the rest of the orchard of 29 trees together. Reine Hortense comes next. I am in your latitude, but my trees are 100 feet above the river bottom. Plant on the highest, poorest soil you have.—S.M.

787. **Salt for Quinces.** My experience with salt as fertilizer for Quinces and other fruit trees has been so unsatisfactory that I would not advise its use.—C. E., P.

789. **Fuchsias in Pots.** The best compost for Fuchsias is one composed of two-thirds turfy loam one-third well decayed manure and a sprinkling of fine bone dust, thoroughly mixed. While the plants are growing freely an application of liquid manure twice a week is of great benefit.—CHAS. E. PARNELL.

841. **Rhododendron Protection.** As the name of the variety is not given, I am unable to judge as to whether it is a sort able to stand the winter when protected. If lifted at all it had better be kept in the tub the whole year. Had your protection been more complete, by the addition of straw around the branches, evergreen branches, or the like, it should have withstood a usual winter.—W. F. LAKE.

744. **Curled Leaf on the Peach.** This is often caused by growing the trees in a heavy, wet soil, and in certain seasons is more noticeable than others. It does not appear to injure the trees, as it only appears early in the season, and in a few weeks the infested leaves drop off.—C. E. P.

832. **Raspberries Stung.** This question is too indefinite. Samples of the stung canes sent to an entomologist would probably illicit all particulars. It may be the work of the snowy cricket. Specimens would enable an entomologist to tell.—E. WILLIAMS, *New Jersey.*

868. **Maggots in Onions.** I know of no remedy for keeping the maggots from destroying the Onions now; but they can be avoided by planting the crop on new land or else renewing the old land by a green crop, such as Rye, Wheat, Oats, Grass, etc., for a season.—C. E. P.

769. **Soil for Roses.** The "sandwich style" to which you refer will not suit Roses. And as you are determined to have them do well with you, I would excavate the bed to the depth of fifteen inches, place six inches of well-rotted manure in the bottom, and fill up with a compost composed of two-thirds turfy loam or good garden soil, and one-third well decayed manure. This preparatory work should be done in the fall or winter months, so that the bed will become settled before it is planted in the spring. Planting should be done as early as possible, so that the plants may become well rooted before hot, dry weather sets in. This plan will eventually produce the most satisfactory results, although it appears to be rather costly and expensive at first. —CHAS. E. PARNELL.

784. **Unpruned Roses.** I have never heard of the plan of leaving hardy Roses unpruned, and am certain that no Rose grower would approve of it. To ensure the most satisfactory results they should be closely pruned every spring, and given a top dressing of manure every fall. Cut the Roses daily and never allow the flowers to fade on the plants.—C. E. P.

826. **Smut on Sweet Corn.** Smut is a fungus; the spores or seeds must be present to produce it, and as no remedies are effectual after it gets into the corn all efforts must be directed toward destroying the germs. These may be on the seeds which are planted, and in that case can be destroyed by dipping the seed corn into a solution of sulphate of copper, which is made by dissolving three pounds of sulphate in five quarts of water, and immersing the corn for 3 minutes, or until it is all wet; if left in long, some of the corn would likely to have its germinating power destroyed. It has been found, however, that if smutty corn or fodder is fed to animals, it does not prevent the germination of the spores, but they remain in the manure, and if this is used on the corn, application to the seed will be of little use, and great care must be taken to destroy all that appears on the corn as soon as it is seen, and not allow any to go to the barn or remain on the surface of the ground. It may be burned, but there is some danger in this case that part of the germs float off in the air, and it has been suggested that burying deeply would be a safer.

858. **Weeds.** Most weeds can be nearly eradicated by not allowing any to go to seed for several years, but Purslane seems to be an exception, and all the pulling out and carrying off that can be done seems to produce no effect upon it, either, because the immense number of seeds produced, remain in the ground for years ready to spring into life at every stirring, or because it seeds when so very small that enough of these little plants grow under something else unnoticed, to stock the land and consequently all our efforts must be directed towards destroying all the plants each year; if the surface is thoroughly scarified within two or three days after every rain, few will grow. It is so succulent that those which do acquire any size cannot readily be killed even if wholly on top of the ground, and so should be carried off; it makes the best of food for cows, swine, or fowl.—W. F. B.

857. **Grapes.** In default of bags made for the purpose, two pound Manilla paper bags can generally be obtained from country store keepers, and answer the purpose very well, or if it is convenient to procure Manilla paper they are easily made. Nothing but the best Manilla is suitable as rain would soon destroy ordinary brown paper. Muslin is also sometimes used (common cotten cloth,) and as a very cheap grade is good enough, it is not very expensive; with sewing machine they can be made up rapidly, and by making a hem around the top to pass a string through, they can be rapidly, placed over the clusters, and the strings drawn up and tied.—Wm. F. Bassett.

876. **Tomato Blight.** I have on two occasions had experience with Tomato vines dying. Once it was the result of a too free application, in the hill, of a manure containing a large percentage of potash; most of the plants made a good start but afterwards wilted, turned rusty looking, and finally died. The other occasion was when I had them planted on a piece of ground imperfectly drained and too much water applied; this I think is the trouble with L. F. Co's plants. Where irrigation is used on Tomatoes, the ground should be thoroughly drained or the result will invariably be the destruction of the roots, rusty leaves and death. Several experiments in growing Cabbage and Tomatoes in soil saturated with stagnant water have resulted every time in the leaves turning rusty and finally dying. Lessen the amount of water and watch the result, but do not withhold the water all at once, or else the sudden check will have a similar result on the roots of this plant.—M. M.

880. **Nutmeg Melons Dying.** The small worms at the root of the plants are the cause of their dying; they are also the cause of the beetle which attacks the leaves. A weak solution of Paris green will destroy them, make it well with the water, and apply with a sprinkling can. Kerosene emulsion is also good but more difficult to make. The Paris green can be safely applied before any fruit appears at which the time the worms are at work.—M. Milton.

886. **Celery Blight.** There is a difference of opinion in regard to the cause of Celery blight, most growers claiming it as the result of severe drought or heavy rain. I believe it is caused, as described in the commissioner's of agriculture report for 1886., by a fungus of the Celery leaf blight, (*Cercospora Apii, Fries*) which belongs to a genus of over 230 species, which attack the living leaves of plants, and do serious injury to our cultivated crops. What induces me to believe that it is not caused by the accident of flood or drought, is that on our muck soil which becomes neither very dry or too wet, we have more or less blight each year. As a preventive a shelter of cloth over the plants is said to have preserved them comparatively free from blight in localities where plants not so shaded were badly diseased. A solution of penta sulphuret of potassium or liver of sulphur, one or two ounces to a gallon of water, sprayed upon the plants at the first appearance of the blight may arrest its progress. This preparation is at least worth a trial, providing the grower is satistied the blight is caused by the fungus. A great help is to cultivate, irrigate, etc., if needed, and supply some quick acting fertilizer. The object being to have the plants make a new growth, and that as rapidly as possible. If the plants are not too far gone or late in the season they will outgrow it. I have seen Celery so bad that nothing was left but the heart and which outgrew it, and made fair Celery.—J. R. Bochove.

875. **Hollyhock Changing Color.** As a rule those plants that produce plain or self colored flowers do not change their color. Plants that produce mottled or blotched flowers often vary considerable, some seasons one color predominating more than the other, but a plant that produces purple colored flowers one season will not produce white the next.—C. E. P.

921. **Treee Dying.** If these trees have been planted for several years and have become well established, I cannot say what caused the trouble or suggest any remedy. But if they were set out this Spring, they must have been improperly planted or cared for at some time; again they may have been carelessly dug, packed or laid in or else injured in transit, as either of these causes would lead to a similar result.—C. E. P.

879. **Fertilizers for Shade Trees.** The very best fertilizer you could apply, would be thoroughly rotted stable manure applied so as to cover the surface underneath the trees to a depth of three inches and forked in lightly. If you must use commercial or chemical fertilizers you cannot procure anything much better than bone dust or blood and bone fertilizer, this can be applied at the rate of one pound to every square yard, and forked in lightly. Peruvian Guano can also be used in the same manner, but before it is applied should be thoroughly pulverized, and mixed with three times its bulk of good garden soil. I do not think that you can apply anything in the liquid form that would produce any satisfactory results. It will not be absolutely necessary to fork in the manures, but if this is not done they should be more liberally applied.—Chas. E. Parnell.

855. **Black Ants in Lawn.** I had a hill six feet long and two feet wide in the lawn; I opened the nest and poured in two qnarts of Kerosene, and it drove them entirely away.—J. B. Waite.

822. **Climbers.** Periploca Græca grows rapidly and vigorously in any of our light soils, and has some points of peculiar excellence, especially the very dark green of its foliage, and, although its flowers are not very large or brilliant in color, they are very abundantly produced being quite curious and distinct from any other climber, having the thick fleshy texture, and something of the rich brown color of Pipsissiwa or Princes Pine (*Chimaphila umbellata.*) It is very easily increased by layers.

848. **Raspberriee Dying.** I think that it is a blight of some description that may prove to be very troublesome at some future time, and so advise you to destroy all infected plants as soon as possible.—C. E. P.

849. **Manuring Raspberries.** I prefer to apply well rotted stable manure in the fall, and to work it in around the plants as early in the spring as possible. Concentrated or commercial fertilizers can be applied in the same way, but should be worked in immediately.—C. E. P.

850. **Muslin in Hot-beds.** I would not use muslin as a winter covering for Cabbage or Lettuce plants, as it might not prove strong enough enough to resist snow and ice. Glass alone should be used for the purpose. For spring work the muslin is excellent; it gives abundant light and plants do not become drawn.—C. E. P.

870. **Tomatoes not Bearing.** Your plants are growing in too rich a soil. Don't cut the tops off, but thin out some of the weaker shoots, and spread out the remainder so as to expose them to the light and air.—Chas. E. Parnell.

835. **Gooseberries for Market.** Downing and Houghton's Seedlings are the best. Cannot say as to the profits of the crop.—Chas. E. Parnell.

829. **Currants and Gooseberries.** Set your Currants and Gooseberries cuttings this fall. Put them in a trench on a slant of 45°. Cover two thirds the length and tread the soil as compactly as you can get it. In the spring most of them will be rooted and ready to set. Better plant in an open lot away from trees. Set them deep when planting. Keep the ground clean and it must be well drained. Strong clay soil well manured is better than sandy soil for these fruits. Set the rows nearly north and south if possible. A south east exposure is best for all small fruits. Mulch the young plants at least for the first year. Use coal ashes (anthracite,) long manure, tanbark, or sawdnst.—E. P. Powell.

842. **Chestnuts for Illinois.** I know of no reason why the common sweet Chestnut would not succeed with you. For prices of trees address any reliable nurseryman.—C. E. P

863. **Tree Pæony not Blooming.** I think that the plant requires more nourishment. Early in the fall give it a good dressing of well rotted stable manure. This to be dug in, in the spring.

831. **Plum Rot.** There is no remedy for the rot.—C. E. Parnell.

651. **Protecting Young Tomatoes.** I make paper cones of thick paper, like cornicopias, that will cover the plants, putting on nights and taking off days. They answer all purposes and are easily cared for.—T. H. J.

654. **Seed Growing.** In a competitive trial of four so called earliest Peas, I found Vicks selected extra early, the earliest, and a continuous bearer for a long time, though not so advertised to be.—Mrs. T. H. J., *Rock Creek, Iowa.*

733. **Market Hydrangeas.** These may be obtained by taking in fall just before the leaves drop, the tops of current year shoots with the terminal bud well matured, and place in a progating bed until rooted; then pot up in three inch pots and put in a cool house to winter. In the spring shift into five inch pots just as growth commences, when they will soon form good saleable plants, with a head of bloom six inches across. The main point is to see that the bud is well matured and the wood about half ripened. The pure white variety Thos. Hogg, is well adapted to this purpose.—E. O. O.

815. **Works on Botany, etc.** As a good standard work on Botany, etc. "The Illustrated Dictionary of Gardening" may be strongly recommended. This is practically up to date, and contains a description of all known plants of horticultural value with full Botanical descriptions and cultural directions. It is copiously illustrated and gives the meaning and derivation of all the names of plants described, with an explanation of Botanical terms in general use.

833. **Barberries from Seeds.** Seeds should be gathered when ripe and separated from pulp by fermentation. Keep in a dry place until February then sow in heat and transplant into open air in May.—E. O. Orpet.

801. **Fir Tree Oil** is an English insecticide sold sold by some American dealers. It is a thin liquid and put up in bottles. Before using it is to be largely diluted with water. Its value for America is doubtful.—C. M. W.

817. **Black Ants.** I wonder if your correspondent is sure that black ants nip off Currants and Gooseberries. It is not generally supposed that they do. They may be destroyed in their hills by making a hole down the center with a sharp stick, pouring in some gasoline or bisulphids of carbon, covering the hole up. The liquid will volatilize and permeate the earth.—C. M. Weed.

818 **Insects on Grapes.** You don't want to "prevent the attacks of the bee, when in flower," or else you want a small crop of fruit. The bees are there to carry the pollen from blossom to blossom and are doing you a favor. The wasps, which cuts off the stem, are something new. Can you get specimens and send to the editor.—C. M. Weed.

821. **Mulberry Propagation.** You can readily increase these by taking cuttings two or three feet in length in the spring, and inserting them half their depth in the ground. Cuttings made of pieces of the roots will also send up shoots, and produce good plants if carefully planted in well prepared soil.—C. E. P.

921. **Delawares not Fruiting.** This is a difficult question to answer off hand without personal inspection, and a study of all the conditions; and even then the cases may be so obscure, as to defeat inquiry. I can only guess at the causes. If the vines never have fruited, they may not be Delawares, but some male or staminate seedling; the Delaware is one of our double sexed, surest fruiting varieties. Or if the failure is only for the season, there were probably some adverse conditions while blossoming, such as a cold rain storm that washed the pollen from off the stigmas, or hindered the production of pollen and fertilization. Or as if the vines were over fruited last year, their vigor may have been so impaired as to render the production organs sterile this season. There may be some element lacking in the soil; try nitrogenous manures, as pollen is mostly nitrogen. These manures stimulate the reproductive organs and promote fruitfulness. Get some Grapeman to look the vines over, and see if it is not a male seedling, and have the conditions looked into.—D. S. Marvin.

823. **Peaches and Grapes together.** The plan you propose to adopt will prove to be anything but satisfactory.—C. E. P.

827. **Evergreens in Texas.** I would transplant them just before growth commences. Try a few White Pines before planting heavily. C. E. P.

829. **Currants and Gooseberries.** To propagate these, plant in a bed of good soil, in the autumn or early in the spring, slips or cuttings about a foot in length. These will root with the greatest facility. I would not for the sake of shade plant them in the orchard, but in the open patch; before planting see that the ground is properly prepared. C. E. P.

832. **Raspberries Stung.** I don't understand this query. Do the pests injure the leaves, fruit or stem?—C. E. Parnell.

837. **Keeping Locusts from Sprouting.** Cut the shoots off as soon as they are a few inches in height, with a sharp hoe, and inch or two below the surface. This treatment repeated two or three times will destroy them.—C. E. P.

THE COMPLETE GARDEN.*

XIX.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 255.

THE GRAPE.

The luscious, handsome, healthful fruit of the Hardy Vine, every land owner should aspire to grow in abundance. Indeed the Grape though requiring vertical space for accommodating its climbing habit, may be grown on a ground area so limited that hardly another kind of fruit-bearing tree or plant could be brought within the same compass. This is a special recommend for its culture in towns and villages, by training the vines against buildings, trellises or arbors. But let it be borne in mind that the Grape requires warmth and sun heat, and to this may be added a well-drained, open soil in which to grow.

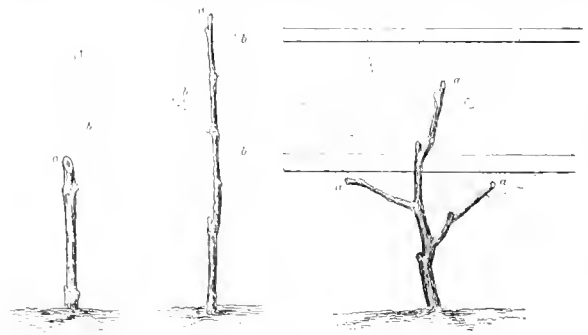


Fig. 49. First year. Fig. 50. Second year. Fig. 51. Third year.
Pruning the Grape the first three years after planting. Heavy parts indicate old wood, dotted parts the course of new wood.

Soil and Culture. In general it may be said that a high, dry, warm soil is the best for the Grape, but it will succeed very well in most any kind of fertile soil suited to garden crops. Loving warmth, protection from bleak winds by means of evergreen screens, or high fences is advantageous. Stable manure is well suited to the young vine at a time when a good foundation of wood is desired, but as the bearing begins, manures that contain a large percentage of potash, such as wood ashes, superphosphate of lime, bones, etc., are to be preferred. If the soil is heavy, the addition of a quantity of anthracite coal ashes, will help it much for Grapes. Prepare the soil by deep plowing, cultivate with the plow the first year, and after that keep the soil stirred, but not deeply, with a cultivator. Plant in rows eight feet apart, the vines six feet in the row for moderate growers, and from that up to ten or more feet apart for strong growers.

Trellises. The approved style of trellise is one which provides three or four horizontal supports either of wire or wooden bars, along the row of vines for carrying the canes, and these supported by posts, at eight feet apart. The end posts of all wire trellises, must be strongly braced in the direction of the wires. For the garden culture of Grapes, a trellise with the lower bar or wire at 18 inches from the ground, and three above this at one foot apart, will be found very suitable. In vineyards of some extent usually but three wires are used and sometimes but two.

Pruning the Vine. There is no end to the systems for pruning the hardy Grape that have been advanced by writers on the subject. The trouble with most of these is, that they are directed to some fanciful ideals of training, which, if they can be carried out at all, it is at the cost of more labor and time than the average person could bestow to this work. Hence we find in the books, system after system attractively pictured, but of which the counterparts are never met in the vineyards. I therefore propose to pass by all theoretical forms of pruning, and confine myself to a simple course that has borne the test of continued actual practice, giving the best of results in fruit and beauty of vine for a small outlay of labor, and very simple in principle.

Of the importance of systematic pruning there can be no question, the salient points to consider are when to prune and how much.

When to Prune. Concerning this I will ask the reader to fix in his mind three distinct times for and kinds of pruning as follows: (*a*) *Pruning when Dormant*, that is the pruning to take place at any time between leaf fall in autumn and March 1st, in the north, November being the preferred time. (*b*) *June Pruning* to take place just after the fruit has set and having in view the thinning out of new canes, and needless suckers of which many usually appear. (*c*) *Summer Heading Back or Pinching* for checking the growth to concentrate the energy of the plant to the fruit, and to the leaves and wood already formed.

How to Prune. First season after planting. Pruning when Dormant. The vine as received from the nursery, whether it consists of one or several shoots should be pruned at planting time back to two eyes as shown at *a* in Figure 49. *June Pruning.* As shoots start up remove all but the strongest one represented at *b* in Figure 49; as this cane extends it should be tied up to a stake or trellise. *Summer Pinching.* If side shoots appear on the main cane, nip them out. About the first of August nip out the end of the cane.

Second Season. In these directions the season is reckoned as beginning and ending with the annual leaf fall. *Pruning when Dormant.* Assuming that a growth of eight feet or more was made by the one cane of the past season, this should now be cut back to four eyes as at *a*, Figure 50. *June Pruning.* Retain the three strongest shoots as *b*, *b*, *b*, Figure 50, removing the other one or ones. If fruit appears remove all but one or two clusters. *Summer Pruning.* Nip the tips of the shoots about August 1st. In case the past season's growth did not reach a full eight feet, then instead of treating the plant as above, treat over again precisely as directed for the first season; then later treating the third season as the second, fourth as the third, etc.

Third Season. Pruning when Dormant. Cut back the three canes of the past season to two eyes each *a*, *a*, *a*, Figure 51. *June Pruning.* Retain six or eight of the shoots that have formed, tying these to the trellise. *Summer Pruning.* Head back all bearing canes about the middle of July in the north to six or eight eyes. This summer pruning is an important matter with the vines from now on. The clipping may be easily done with a quick stroke of a sharp knife.

Subsequent Seasons. Pruning when Dormant. Apply the principle of cutting all the main shoots of the past season's growth back to two eyes each. From these eyes will then proceed the canes which will fruit the coming season. In rare cases as when a certain space should soon be occupied, three eyes might be left, but this should not be often. By observing this rule a distribution of old wood something as is shown in Figure 52, will result. This is a drawing from nature of a six year old vine in excellent shape, the dark parts showing old growth, the light ones, canes of the present year. In time it becomes desirable to replace the older branches by younger ones, a matter easily done by encouraging an occasional new shoot like A springing from near the root to form a main branch. *June Pruning.* Now the vines should be gone over to thin out all superfluous shoots, of which, usually, there will be quite a number, and tying up others. Let enough remain to give an even distribution over the trellise, say for having the canes at the limits of the trellise average from 9 to 12 inches apart, the object being to admit air and light to all parts of the vine. *Summer Heading Back or Pinching.* Observe what is said under the third season concerning this point. Numerous small laterals are liable to start up on the canes now headed back, the more so it the cutting is done rather early; of any such it may be well to nip out the ends a month after the regular heading in.

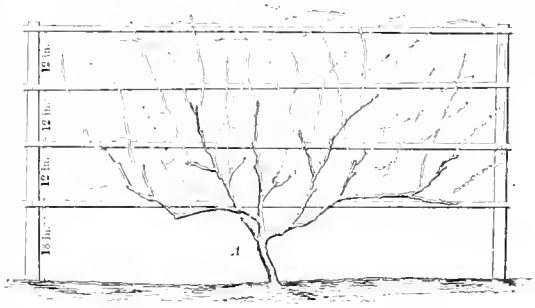


Fig. 52. A well-managed six-year-old Vine. Heavier parts show old wood; lighter parts, this year's wood.

Winter Protection. The benefits of winter covering are so decided, that the course is to be recommended for all varieties. With the hardier kinds nothing further is required than after spreading the vines out on the ground to lay a rail across them to keep them in place, the warmth of the earth, and the snow lodging on the vine protecting it sufficiently from severe winds. For more tender varieties some straw, evergreen boughs, or soil covered to a slight depth over the canes, and also over the root area should also be applied. Lay the vines down in November, just after pruning. Uncover them immediately after the frost has left the soil in the spring.

A Selection of Varieties. Following is a short list of such Grapes as have been well tried, and found to be reliable over a large range of our country. With the constant coming in of new varieties there is a strong temptation offered to invest in these, but to the inexperienced, I would say leave novelties for others to test.

BLACK GRAPES. Concord, Early Victor, Hartford Prolific, Herbert, Telegraph, Worden. RED GRAPES. Agawam, Brighton, Delaware, Diana, Jefferson, Lindley, Rogers No. 30, Walter. WHITE GRAPES. Em. State, Lady, Niagara, Pocklington.

THE MULBERRY.

This hardy fruit is but little cultivated in our country, but if it were introduced into gardens to the extent of one or several trees each, the fruit would doubtless find some use. Its season is soon after that of the Cherry, and the fruit needs no picking for it drops as it ripens. The tree is of the easiest culture, requiring little or no pruning. The soil best suited to it is a light, rich loam of good depth.

Varieties. The Black Mulberry long known to the old world, is a large, delicious fruit, but the tree is scarcely hardy north of New York. Downing's Everbearing Mulberry is a vigorous, and in dry ground a hardy sort, the fruit of which is quite rich, sweet, and juicy. In size it is half an inch in diameter, and of more than twice this length. The Red Mulberry is a native species that bears fruit about an inch long, and which is palatable.

(*To be Continued.*)