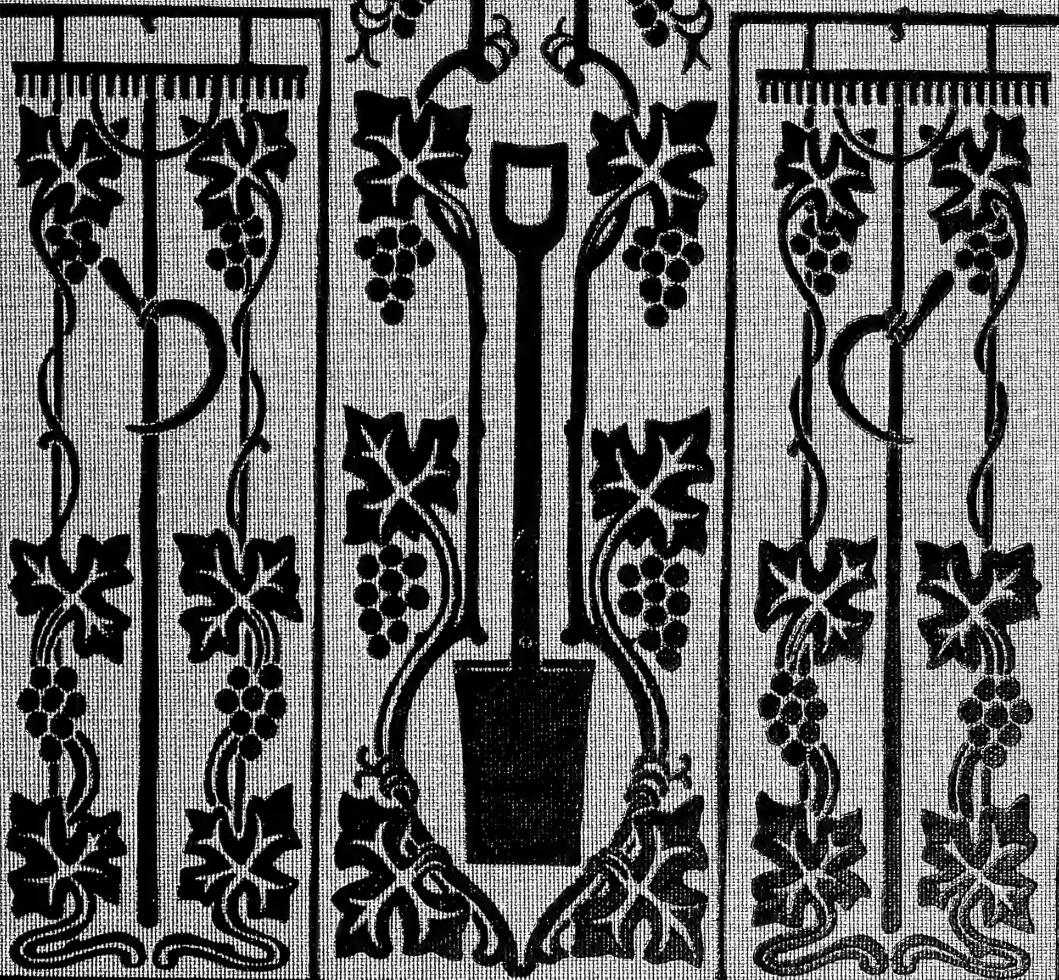
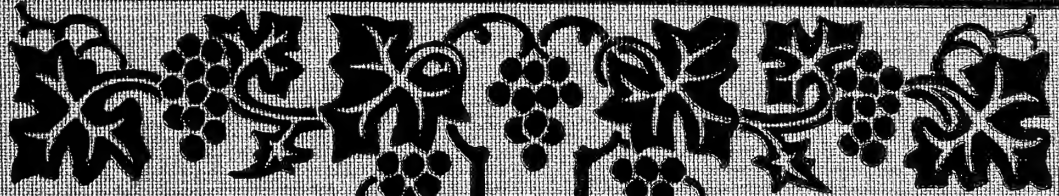


THE GARDEN MAGAZINE



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THE GARDEN MAGAZINE

*Devoted to Planting and Managing the Grounds About the Home
and to the Cultivation of Fruits, Vegetables and Flowers*

Volume I
February to July, 1905



NEW YORK
DOUBLEDAY, PAGE & COMPANY
1905

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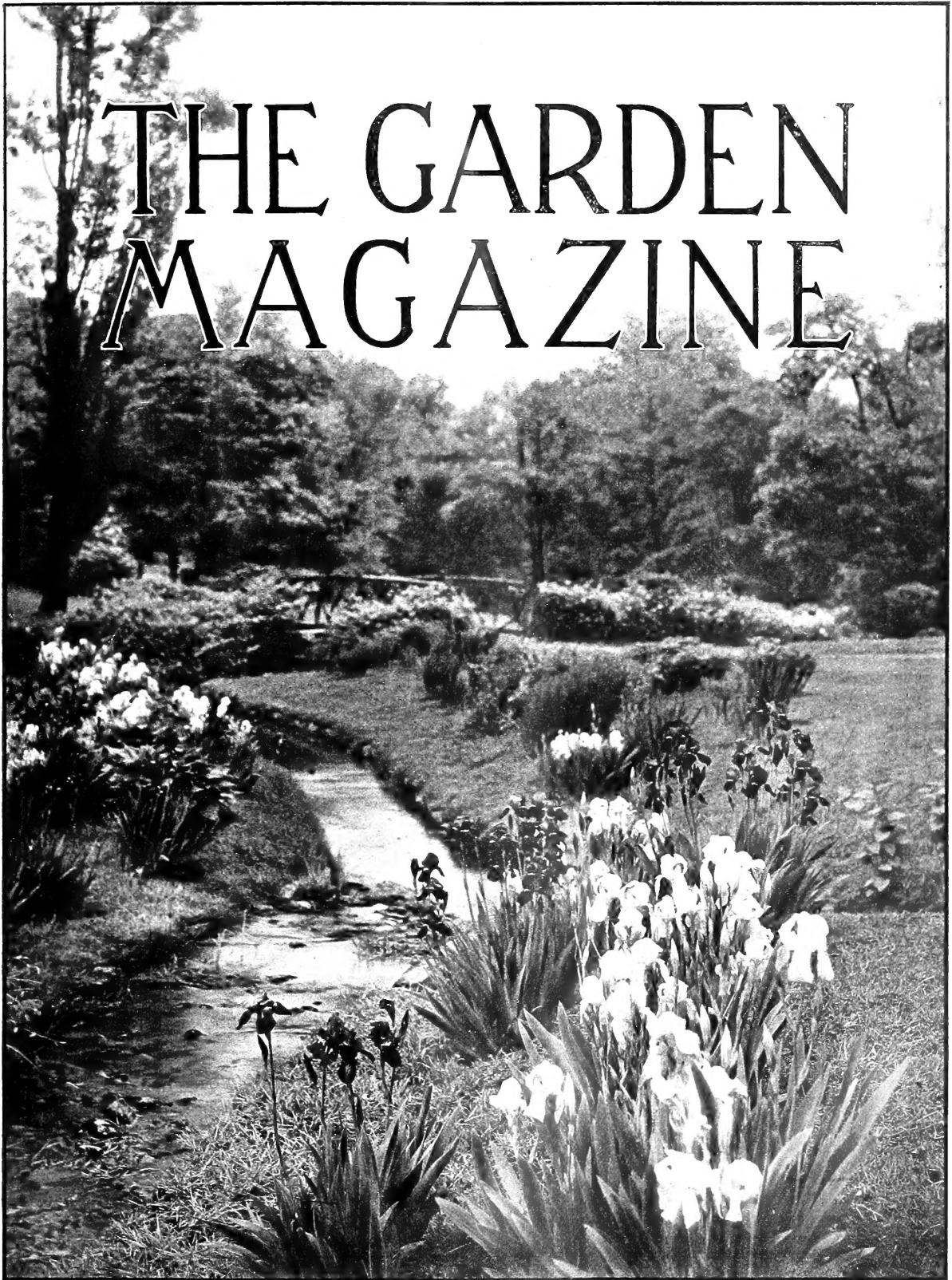
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FEBRUARY, 1905

TWENTY REGULAR DEPARTMENTS: THE GARDENER'S REMINDER; COLDFRAMES AND HOTBEDS; THE BACK YARD; VEGETABLES; BULBS; ROSES; ANNUAL FLOWERS; THE SMALL GREENHOUSE; THE WATER GARDEN; THE WINDOW GARDEN; GARDEN INSECTS; THE HARDY BORDER; RECENT DISCOVERIES; ETC. \$1.00 A YEAR

THE GARDEN MAGAZINE



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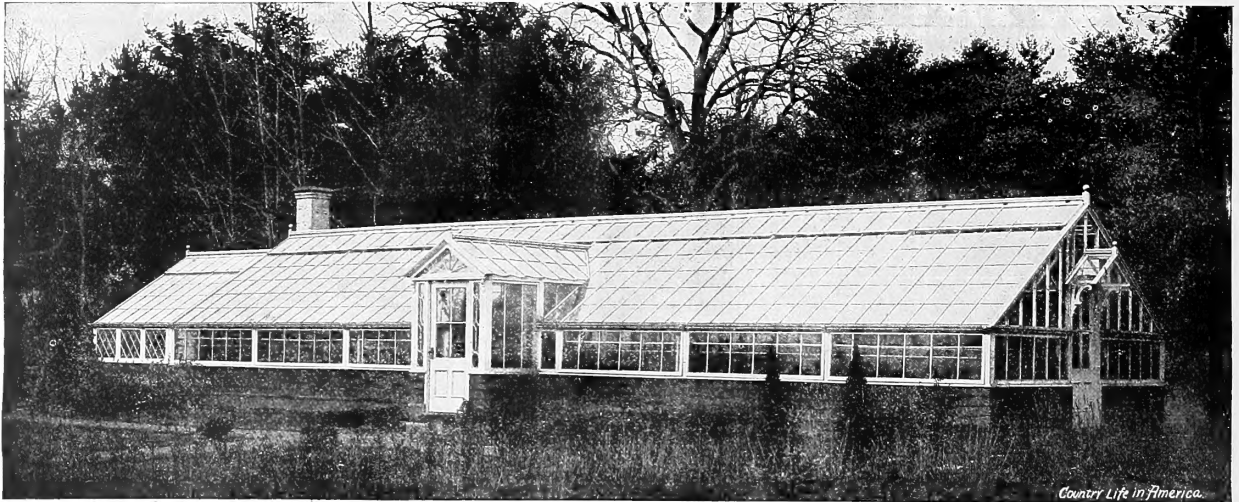
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• IN AMERICA •



DOUBLEDAY PAGE & CO
133-135 & 137 EAST 16TH ST. NEW YORK



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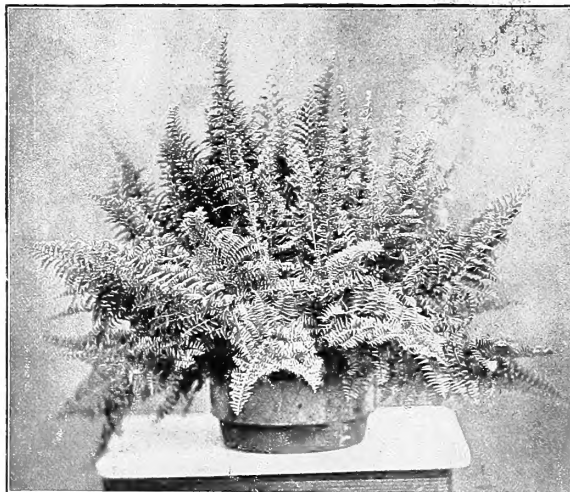
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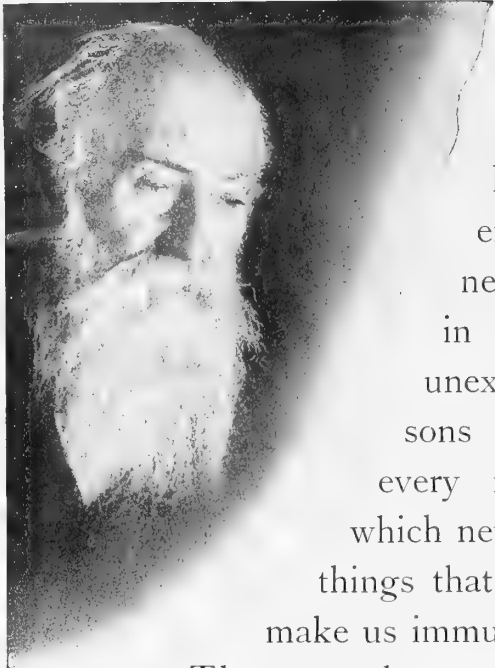
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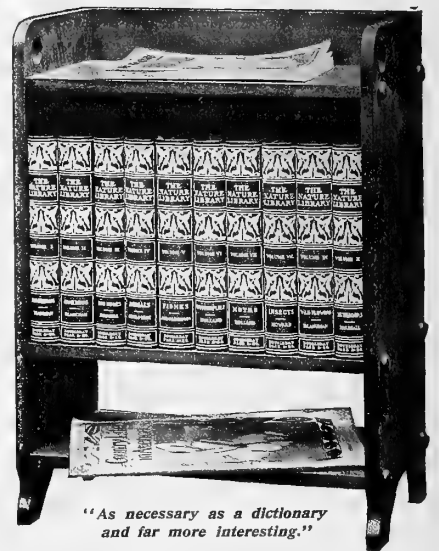
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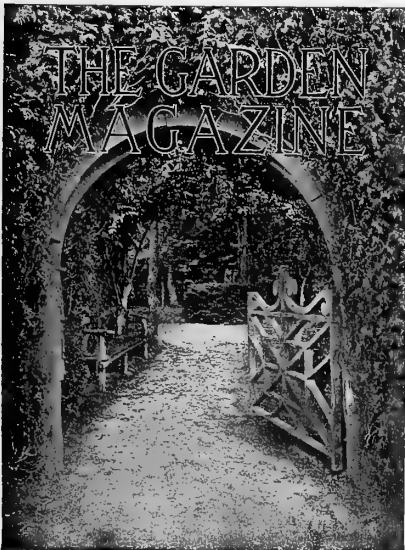


"To business that we love we rise betime
And go to't with delight."—*Antony and Cleopatra*

PLANS AND PURPOSES

WHEN any one feels the call to start a new magazine, there rises up a well-defined class of people who protest that there are magazines enough, and it is possible that some will say this apropos of THE GARDEN MAGAZINE.

For our part, we have been surprised at the great patience of the public, which has so long waited for a beautiful periodical devoted to that most fascinating and refreshing of all subjects, the garden. There are dignified and attractive monthlies devoted to every other subject under the sun, from railroads to chickens, but no such magazine as we have in mind to make exists. Our chief difficulty will be, we fear, not to find a market, but to make a magazine good enough to meet the demands of that market: it will take a little while to get in full swing of the great field that we hope and mean to occupy. We know the deficiencies of this first issue, and we know where our real shortcomings lie, but we shall be grateful for practical suggestions for improvement in text or illustrations, and especially we invite the stories of personal gardening experiences when they are practical and inspiring.



The March Number

A NEEDED MAGAZINE

THE GARDEN MAGAZINE is the logical working out of the growing interest in the garden not merely as a means of livelihood (though we expect to see more and more people turning to it as a life work), but as a delight and pursuit for the busy people in the world who find a new fascination in the things of the soil.

In England, gardening papers and magazines have circulations running into the hundred thousands; the best authorities are represented in their columns, and in technical matters they are far more advanced than would meet the needs of any large public in this country; but they are, with few exceptions, not beautiful. There is really no excuse for a periodical which touches the things of nature that has no beauty of form and illustration; and here, we have felt, there is a great opportunity.

QUALITY, NOT BULK

Fine printing and paper and fine cuts cost about twice as much as ordinary printing, cheap paper and poor illustrations, and yet if one does not attempt to give too much in quantity, the quality may be sustained and the magazine sold at a low price. THE GARDEN MAGAZINE will contain the very best we can get, and we expect to cover the whole subjects with crispness and interest; we intend that all articles shall be short and to the point.

TIME OF PUBLICATION

As the contents of the magazine must necessarily be timely, and as each number will dwell a good deal on the things to be done month by month and season by season, we propose to have every issue in the hands of our subscribers about two weeks before the beginning of each month. Fully half the pleasure of gardening is in the planning of one's work and the joy of anticipation. Seeds and plants are to be purchased and work cut out before the month opens, and we feel that the early arrival of the magazine should stimulate one's interest in advance.

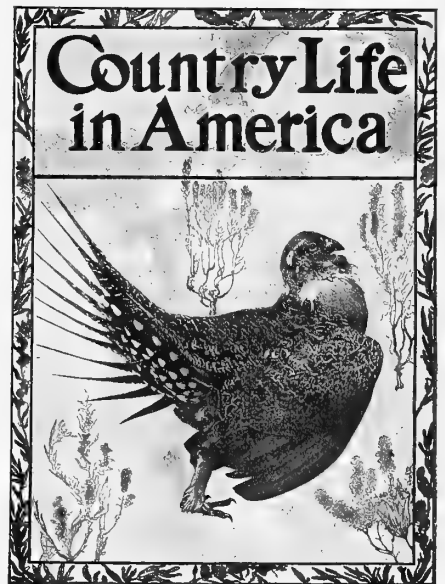
THE MARCH NUMBER OF THE GARDEN MAGAZINE

will be the chance to bring into this magazine the real spirit of spring. It is too early to speak as yet of the contents of that issue.

It will be changed and changed again: the least attractive articles or subjects will be displaced by more attractive ones—it is wiser to waste a less attractive article when a better one appears than to print the second-best. If you find any subject neglected in this initial number, let us know what it is.

THE FEBRUARY ISSUE OF COUNTRY LIFE IN AMERICA

Our older magazine publishes in February an article called "The Love-Making of the Grouse," which typifies the kind of thing the magazine stands for. The photographs, by Josef Brunner, depict this shy bird at his mating season, when the cock sets out



The February Number

to win his lady-love. That such a series of life photographs could be made is almost incredible. These photographs form but one of a series which have been appearing month after month on the squirrel, the tarpon, the beaver, etc., and represent months of painstaking work. The time and patient effort wasted even by the most expert photographers to gain the results given to the public can hardly be realized.

How a Commercial Tree Reached Maturity

THE STORY OF A GREAT SUCCESS BUILT
ON A SMALL ARTICLE, WELL MADE

THE growth of a great business is like the development of a tree, and its final success depends very much upon the same sort of treatment. To begin with, the seed, or the article upon which the business is based, must be good; then the soil or class of customers must be suitable and in the proper condition to receive it; and, finally, the cultivation of the ground and care of the tree itself must be thorough and careful, for like a

per cent. increase in ten years; 1895, 63,000; 1896, 87,000; 1897, 98,000; 1898, 139,000; 1899, 185,000; 1900, 227,000; 1901, 326,000; 1902, 400,000; 1903, 500,000; 1904, 750,000.

The whole structure of this great tree is based on the quality of the seed—the pen itself. When Mr. Waterman made the first Waterman's Ideal, there were fountain pens of the sort on the market, but they were a nuisance, not a necessity. The Waterman's Ideal of 1884 was the best of its kind. Many of those made that year are in use to-day, and it could be depended upon to do its work. As the years sped by, improvements were invented, and so this perfect writing instrument was kept first by sheer quality.

The ground was ready for the establishing and growth of this tree. People were tired of fixing quills, of dipping pens, and of pointing pencils. Busy people were looking for an instrument that would transfer their thoughts to paper with the least effort and the greatest certainty: Waterman's Ideal Fountain Pen fulfilled all these conditions perfectly. The ground, contrary to the usual procedure, increased in proportion. From 200 to more than 750,000 pens per year in twenty-one years of rapid growth.

No growth, however, can be symmetrical and solid if care is not taken to cultivate the soil and prevent disease. The L. E. Waterman Company is a tree whose increase has been fostered by the rains of kind words spoken by satisfied buyers; the ground in which it grows has been fertilized by the method of fair dealing and help to those who handle its products. The ills that beset all natural growths have been warded off by the sheer strength of the structure itself. No vulnerable points have ever been found in the

L. E. Waterman Company. Their product has always been above reproach.

Every feature of the growing thing has some particular use; every one of the few parts of the Waterman's Ideal Fountain Pen has its particular purpose also; nothing is superfluous, nothing essential is left out, there is nothing to get out of order. All those things (seeming conveniences, perhaps) that might complicate the simple workings of the pen are omitted. Nothing can hurt the Waterman's Ideal but gross abuse.

It was recognized very early that no two hands were alike and that different people required different nibs. These writing instruments, therefore, were supplied with a great variety of points, and no buyer is urged to buy what does not suit him. It is the policy of the company to exchange till the customer is suited. In this way, any one, from the person who needs the heavy nib necessary to make carbon copies of his writing, to the artist who draws hair lines, is fitted with a pen of his liking, and there is no dissatisfied talk to mar the reputation of the pen.

It is its adaptability to every need that accounts for the universal use of the Waterman's Ideal Fountain Pen. The boy who saved up his money, bought a pen, and used it all the week writing express receipts, and Saturday afternoon to keep baseball scores, was as much entitled to consideration in the Company's eyes as the bank president who used his to sign checks.

In one respect this thriving commercial growth and the fruits of it are quite unlike the natural tree; for there are few, if any, fruits that meet the needs and tastes of every one, while the product of the L. E.



L. E. WATERMAN

Inventor of Waterman's Ideal Pen

tree, a business that does not develop and grow continually loses its vitality, begins to droop, and eventually dies.

Twenty-one years ago this month there was planted, in a well-prepared and fertile soil, a seed that after careful tending and watchful care has developed into a flourishing healthy business, like a sturdy tree that has reached its maturity and is growing still.

At the back of a little cigar store on Fulton Street, New York, Mr. L. E. Waterman, on February 12, 1884, established the Waterman's Ideal Fountain Pen business. A single desk was the office, factory, store, and stock-room, and Mr. Waterman was the entire force, manufacturing, sales, and accounting. That was in 1884, and the output that year was 200 pens, made and sold by the inventor. In February, 1905, a six-story building is required by the sales, business, and accounting offices and store rooms, while a separate factory is in operation for the rubber work and another for the gold pens; the employees run into the hundreds, and the product exceeds three-quarters of a million per year. This, in a nutshell, is the story of the growth of this great enterprise. The following figures illustrate the increase even more graphically: In 1884 the output was 200; 1885, 500; 1886, 2,000; 1887, 5,000; 1888, 9,000; 1889, 12,000; 1890, 18,000; 1891, 22,000; 1892, 28,000; 1893, 38,000; 1894, 42,000—2,100





Waterman Company is getting to be a necessity to almost everybody, and all those who write would find it a convenience that they would never part with had they once experienced its joys. Here are some of the unusual uses to which Waterman's Ideals have been put in addition to the keeping of baseball scores already mentioned: Marking uniforms and linen during a recent campaign; making memoranda on the field of battle in war correspondents' note-books; making, in the hands of a skilful draughtsman, drawings that cannot be told from wood engravings; the reporting of rapidly given testimony in court. But it is in the lightening of the burden of every writer, whether of personal correspondence, literary matter, school compositions, or accounts, that this useful tool has gained its popularity. The range of this fruit is bounded by no zone, nor is its growth hampered by climatic conditions, for it is found in all countries and climes and is used by all kinds and conditions of people.

The Waterman Ideal is the most cosmopolitan of writing instruments, for it records all tongues and is alike fluent for the poet, the composer of music, or the writer of chance postal-cards at the mail-box. This extensive use of the fruit of the Waterman tree is not a matter of chance; it is due to its entire reliability under all conditions and its adaptability to every peculiarity of every user.

The making of this necessary recorder seems a simple matter until one has followed the process. The gold nib alone requires between sixty and seventy operations; and the hard rubber barrel about forty more. When one considers the number of processes through which each completed pen passed, and the costly quality of the material used, the wonder is that Waterman's Ideal can be sold so cheaply. There is no doubt that a fountain pen can be produced with much less work, but not Waterman's Ideal Fountain Pen. For this masterpiece specially trained workmen are employed in making, and experts do the work of assembling, so that no imperfect pen leaves the maker's hands.

Though great care is expended in the making of these pens, equal effort is spent in the marketing of them: there is hardly a town or village in this country that cannot boast its display. The stock of pens in the village stationery store, jewelry shop, or pharmacy is always kept up to requirements of the buyers, and the same system of exchange, until the customer is suited, is in force as in the main office on Broadway, New York. Practically, the buyer in places remote from the great centers has the same facilities as the dweller in the chief metropolis. So thoroughly does the L. E. Waterman Company realize that satisfied patrons are its best asset, that a bound book is issued by them for the education of people who sell their pens throughout the country. It is practically a correspondence course on pen selling and pen using, to the direct advantage of the purchaser, who gets what he needs and what suits him.

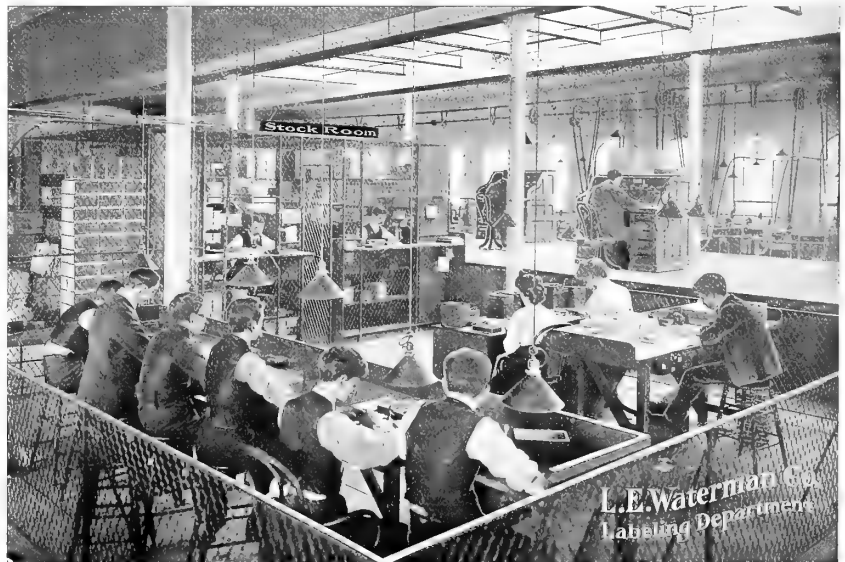
It is thoroughly understood that if a pen

does not satisfy the buyer it is not because fountain pens are not suited to that writer, but because that particular style of point or holder does not fit the peculiarities of that hand. This accounts for the great care expended in training the pen-clerks who sell the Waterman product. There are Waterman Ideals to fit any hand.

Twenty-one years ago the small shoot of the L. E. Waterman Company appeared in an obscure place full of vigor and thriving in spite of many adverse conditions. To-day the great tree has reached its majority, its fruits are to be found in every quarter of the globe, its roots extend to many lands, and its growth in its twenty-first year is quite as rapid and as symmetrical as in the early years of its vigorous youth.

The main stem of this great tree is the six-story building, corner of Cortland Street and Broadway, but three short blocks from the place where the seed was planted. A factory at Seymour, Conn., where the rubber barrels are made, and a gold pen factory in lower New York City, are offshoots of the main plant.

The inventor of this almost indispensable writing instrument planted the seed so many years ago with a confidence in the future of the great tree that should grow from it that nothing could shake. The tree grew, and Waterman's Ideal came into more and more common use, but not until the eve of its twenty-first birthday was its universal use, and unrivalled quality officially recognized. Up to 1904, fountain pens were not considered worthy to put be in the Grand Prize class at international expositions, but at the St. Louis World's Fair Waterman's Ideals received the only Grand Prize for a fountain pen, and one of the four awarded to all the varied industries in the great Palace of Manufactures. Not until this pen is in the hand of every one who writes (and this will come about as soon as people realize what a convenience it is) will the L. E. Waterman Company tree cease from growing.



Superb English Delphiniums



FOR twenty-five years we have been urging the many advantages of gardening with Hardy Plants, and now that these advantages are pretty generally recognized we wish to call attention to some of the better varieties which are not well known. Everybody knows about the good qualities of Paeonies, Phloxes, and Hollyhocks, but there are scores of plants equally as good which are comparatively unknown. Among the best of these are the superb English Delphiniums. Tall, stately and picturesque in habit, they produce immense spikes of flowers of every imaginable shade of blue for a very long season during the summer. The colors are often combined with various shades of bronze, sometimes with white eyes, and the range of colors includes plums, purples, white, and primrose yellow. The flower spikes are sometimes two feet in length, and the variety and combination coloring is lovely beyond description. The plants range from three to seven feet in height and will thrive in any soil except in a very light and sandy one, and even in this if it is liberally enriched with well-rotted cow manure. We have the best and the only good collection of English Delphiniums in America. They are grown from the finest collections in England.

Special Offer of Improved English Delphiniums

Fine mixed English,	1.50	per dozen,	10.00	per 100
English, in separate colors,	2.00	"	13.00	"
Selected varieties, selected from thousands of seedlings grown from a famous named collection,	3.00	"	20.00	"
Extra selected varieties,	.50	each,	5.00	
White varieties,	1.00	"		

We have the largest, finest and most comprehensive stock of Hardy Plants in America, including three hundred varieties of the choicest Paeonies, one hundred varieties of Japanese and European Tree Paeonies, including extra large specimens, and also the largest collection of Japanese Iris in the world and an unsurpassed collection of named Phloxes. Our illustrated catalogue describing these and hundreds of other Hardy Plants, Trees, and Shrubs will be sent on request.

"A Plea for Hardy Plants," by J. Wilkinson Elliott, contains much information about Hardy Gardens, with plans for their arrangement. We have made arrangements with the publishers of this book to furnish it to customers at a very low price. Particulars on request.

ELLIOTT NURSERY CO.
PITTSBURG, PA.

The Garden Magazine

VOL. I.—No. 1

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TEN CENTS A COPY



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Wilhelm Miller, Editor Cover design by Henry Troth Doubleday, Page & Company, 133-137 East 16th St., New York



[For the purpose of reckoning dates, New York city is generally taken as a standard. Allow six days' difference for every hundred miles of latitude.]

The Five Most Important Things

PLAN your garden; make a diagram. Send for catalogues now. Order seeds, plants, and tools now, if you want better goods for the same money. Study fertilizers, and decide what you want, where to get it, and how much to pay. Resolve to kill the bugs this year. Study spraying, and get your spraying outfit now. Don't put this off till March. See the new department, "Killing the Bugs." Build a coldframe and a hotbed.

OUTDOOR WORK IN THE NORTH

On pleasant days, prune apple-trees and grape vines. See article by Professor Craig. Mulch strawberries and the hardy border if they were not covered in the autumn. Manure the lawn, or, better still, scatter bone-meal on the snow; it harbors no weed seeds. Haul out manure to the vegetable garden

as fast as it is made, or else keep it under cover and fork it over every week.

Plan any grading or draining you have in mind. Time will be too valuable for this next month.

Remove roots and stones. Possibly the stones may help to make a good rockery.

Unless you have previously spread manure on the ground beneath the vines, shrubs and evergreens, do it now.

HOW TO RAISE EARLY VEGETABLES

Make or buy a hotbed before February 1st, and you can have home-grown radishes in February. A crop can be raised in twenty-one days if you know how!

If you want fresh vegetables in May, sow any time in February in hotbeds the following seeds, in order to have strong young plants to set outdoors April 15th or whenever the danger of severe frost is past:

Early cauliflower, if you want the most delicious member of the cabbage tribe out of season.

Kohlrabi, one of the good things the Germans appreciate and we don't know. Looks something like an above-ground turnip, but tastes better and has a flavor of its own.

Lettuce, next to radishes, the easiest and quickest crop. Will make heads in coldframes by May 1st.

Leeks, if you want to have savory soups. If you care for young onions, crisp and tender, now's the time!

Tomatoes may gain a little on the season if transplanted into pots and kept pot-grown until settled weather (end of May), then turned out of pots into the open garden.

If you like a salad plant with a "tang" to it, try endive, and tie up the plants so they

blanch. When you once acquire the taste, nothing else will do.

FLOWERS WITHOUT A HOTBED

Sow now in flats in the home window the following flower seeds:

To make the autumn red, scarlet sage or salvia.

To fill gaps in the hardy border, single dahlias.

For hanging-baskets, the cigar plant (*Cuphea Lavæ*).

If you want it at all, now is the time to start ageratum.

For May bloom indoors, ten weeks' stock (*Matthiola incana*, var. *amæna*).

To cover permanent bulb-beds after the spring flowers are gone, try verbenas.

For edging the garden walks, tufted pansies. If sown now, they will bloom all summer.

For a trailing-vine for a veranda-box, the variegated periwinkle (*Vinca minor*, var. *alba* or *aurea*).

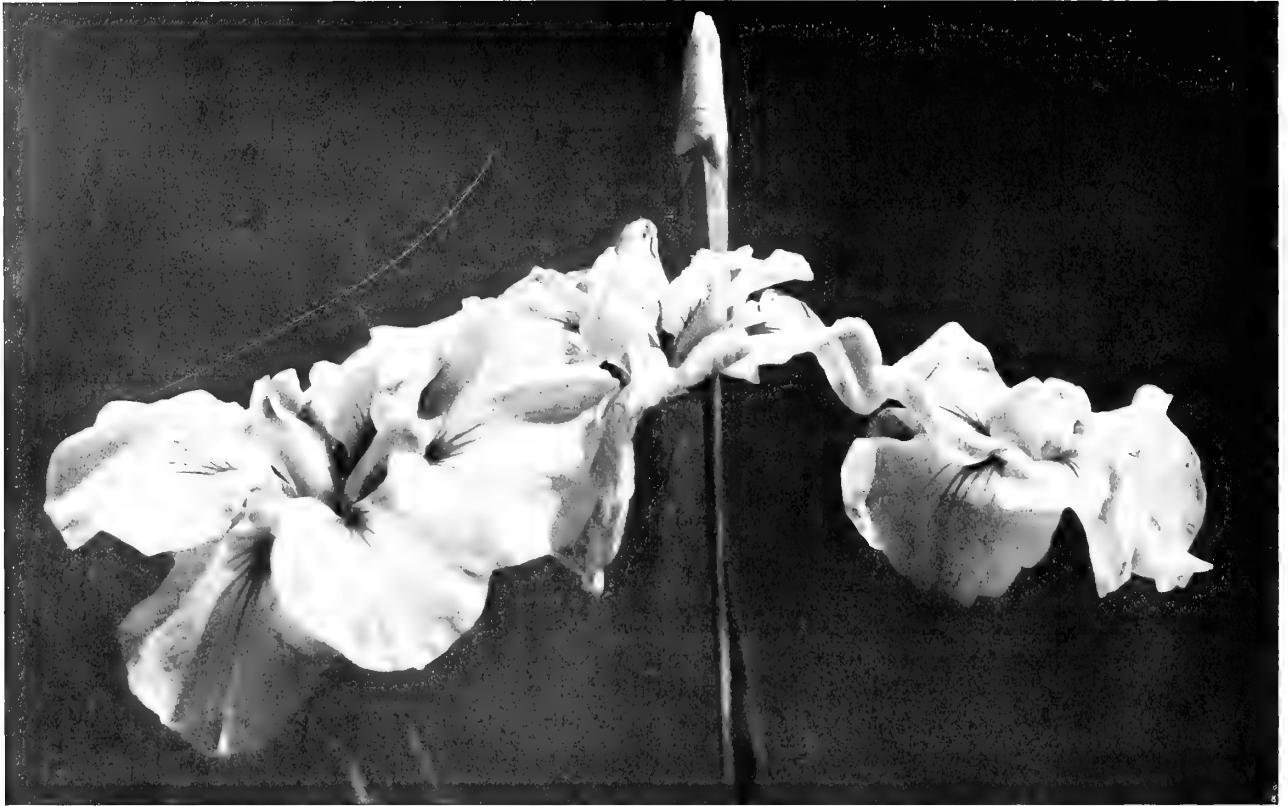
If you want an annual vine on your porch before the permanent ones are large enough to cover it, try *Cobæa scandens*.

For a part of the grounds where you want a big mass of color in September try cosmos, and tie it to chicken wire.

For large specimen plants in twelve-inch pots for hall and porch decoration, sow seeds of cup-and-saucer Canterbury bells.

For a summer bed on the North side of a building, where there is plenty of air and diffused light without strong winds or direct sunlight, try tuberous begonias.

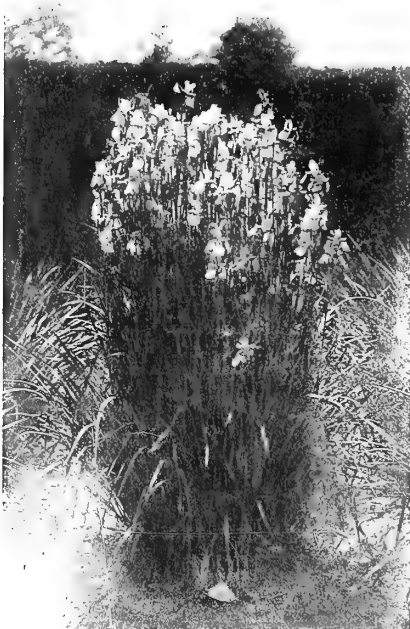
If you want a white-leaved foliage plant for a flower bed, sow seeds now of one of the dusty millers.



1. The Japanese iris, largest of the family. Flowers nine to twelve inches across. A moisture-loving species. The flowers are flat—i. e., they have no upright petals

The Best Irises—By Neltje Blanchan

Photographs by F. A. WAUGH



2. The Siberian iris, distinguished by its early season and tall, slender stalks. It blooms in May, or about two weeks before the German iris

LITTLE wonder that a plant so boldly decorative in outline and bearing a flower of exquisite coloring so marvelously formed should make its strongest appeal to the artistic Japanese. From these foremost gardeners of the world has come a strain of irises that neither orchids nor lilies can rival in beauty of form, texture, coloring, markings, and general effectiveness. In the Mikado's garden, under ideal cultural conditions—that is to say, in rich, warm, sunny, alluvial land—the blossoms will measure from nine to twelve inches across their flat petals. Around the shores of those miniature lakes and streams in which the Japanese gardener, however humble, delights, the irises are no less lovely because a small garden demands that they be of lesser size. Every one appreciates the iris in Japan. Therefore, on the most costly *cloisonné* and ceramic, as well as on "many a vase and jar, on many a screen and fan," whose decorator may receive only an eighth of a cent for his sketchy painting, this flower, imperial and democratic, is the most familiar. For the artist, at least, its value is double that of the national chrysanthemum.

Yet the *Iris Kämpferi* may be as easily grown as the potato. Moreover, it is perfectly hardy. High, dry lands do not suit its moisture-loving roots, but good garden

soil, enriched with thoroughly decayed manure, deeply dug in and well watered during May and June—the blossom months in the northeastern United States—will produce flowers of wonderful size. Do not select a shady place for your irises. They thrive under full exposure to the sun, but moisture they must have to bloom their best, and sometimes their roots will penetrate two feet deep to get it. Naturalized in the water garden, where the tall, narrow, blade-like leaves rise in phalanxes around the shore and the stately beauty of the flowers is reflected in the mirror below, they are ideally situated; but let no one forego the delight of growing Japanese irises merely because he has not a pond or stream on his place. Some exceedingly fine specimens have been produced in a city back yard.

Now that the Occidental as well as the Oriental hybridizers produce an enormous number of seedlings every year, new varieties are constantly offered in the catalogues—so many that, were their charms described in Japanese, they could scarcely be more bewildering to the American amateur. The original parents of Kämpfer's lovely tribe were *I. lavigata* with drooping "petals," modeled on the natural rule-of-three plan, and *I. setosa* with broader, more horizontal "petals," the three outer and the three inner

ones being of equal size in many of its new varieties, giving a strange regular symmetry to the flower. The pernicious trick of doubling and multiplying "petals"—a common vice of the up-to-date sport—quite destroys the iris's natural grace of outline, which is its chief characteristic and charm. Blotches and patches of color like a circus pony's sadly detract from its stately dignity. Surely the range of pure colors, from silvery white, through pale blue, lilac, plum, and purples, with exquisite veinings and star-like centers of contrasting shades or of gold, should satisfy the most exacting eye.

German irises differ from the Japanese in having shorter, broader, blade-like leaves and flowers not yet induced to lie flat, having three strongly recurved and handsomely marked "petals" or falls and three upright standards. Both kinds have creeping stems, and it is by division of these fleshy, thong-like roots that the plants are most successfully propagated. Set out early in the autumn, they should bloom the following May. It takes at least three years to produce flowers from seed—an interesting experiment for the amateur hybridizer, but one rarely tried except by commercial men. While not so impressively magnificent as the Japanese strain, the German irises are nevertheless very beautiful; their coloring including white, yellow, lilac, and purple—either one of which every iris would be in a state of nature—and, in addition, some queer browns and rich velvety maroons combined with yellows which are unusual and effective.

We hear of the common blue flag. In reality it is not a blue, but a purple. Yet there is a little dwarf iris, a variety of the Crimean *Iris pumila* and *I. Persica*, which are true blue—that heavenly color all too rare in our gardens.

No plants are of easier culture than the German irises. They like a dry soil, rich food, a sunny, open situation, and plenty of room to spread, but they do not insist upon any of these conditions. Neglect them,

starve them, crowd them among the shrubbery, stifle them in the herbaceous border, bury them in the rock garden, still they will bloom—sulkily, perhaps, but far more than they really ought, considering. Give them a rich dinner once a year, and let them alone thereafter, they will repay you most lavishly. Just as the gorgeous pageant of Dutch bulbs—jonquils, narcissi, and tulips—passes, the German irises begin their royal show, several weeks before their Japanese sisters unfurl their banners. Special emphasis should be laid upon letting all irises alone. They resent being fussed over. If it is necessary to divide a clump, cut it in half with a sharp spade and fill in the hole with old, well-rotted manure. Don't disturb the entire clump in order to take away part of it, and don't bury the rhizome when you plant the root.

On the streets of London and Paris and in the market-places of western Europe are sold bushels of the very beautiful Spanish irises, whose charms are not yet appreciated here as they deserve to be. In loose, friable garden soil, in a sheltered corner, they yield a lovely crop of flowers to cut for the house. More dainty than the larger German and Japanese irises, they are airily poised like butterflies on the tip of tall, slender, swaying stems amid narrow, grass-like blades. Secure a ribbon of soft lead from your plumber, place it in the bottom of a bowl, pinch it about the iris stems, and so arrange a few that they appear to be growing out of the water. Pebbles conceal the lead and help the illusion. From the Japanese we are slowly learning not to bunch a miscellaneous lot of cut flowers in wads for our vases, but to give each flower its natural, characteristic attitude and isolation.

English irises, another group of these endlessly beautiful plants, grow from bulbs like the Spanish strain, but in form and poise the flowers more closely resemble the Japanese. Coming toward the end of the



4. A German iris. Of the six showy parts, the three outer, which are reflexed, correspond to the calyx; the three inner or incurved ones to the petals

iris season, which they prolong until the hot weather, they are especially desirable for those who tarry too long in the cities to enjoy the spring flowers about their summer cottages. Bulbous irises suffer from moisture and bleak exposure. A dry soil, even clear sand at the base of the bulbs, preserves them from decay, and, while they must be well nourished if they are not to fail utterly, let no manure come in direct contact with these. The rhizomatous irises are the gross feeders.

Certain irises there are that should be in every garden. No one is too poor or too inexperienced to have at least one fine clump of Japanese or German irises; for instance, the early grayish-white Florentine "orris" (whose dried root furnishes the sachet of commerce), with its large grayish-white flowers, often six inches deep, the falls veined with yellow and green at the base with an orange-yellow beard; or *I. variegata*, with large, slightly scented flowers, their standards bright yellow, their falls claret-red heavily veined. The yellow flag of England, *I. pseudacorus*, is delightfully decorative, and cheap enough to naturalize in quantities with our own native species where one is so fortunate as to own a stream. In similar situations, or even in ditches, the small but showy Siberian flag in blue, white and purple varieties is a charmer. And now that irises are being so successfully forced in the greenhouses, there is not a month in the year when we may not have them in our homes.



3. German iris (*Iris Germanica* and allied species). The most popular iris and the best for general conditions



5. A plan made in winter is more helpful than many books at planting time



6. A good time to plan the garden—when the snow is on the ground



7. A delightful confusion, but you will raise more and better vegetables if you make a plan

How to Plan the Vegetable Garden—By Edith Loring Fullerton

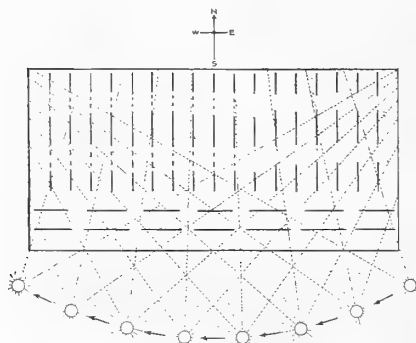
THE BEST WAY TO RUN THE ROWS—SCHEMES FOR SAVING SPACE, AVOIDING HAND-LABOR, AND GROWING TWO CROPS ON THE SAME GROUND

Photographs by H. B. FULLERTON; diagrams from sketches by the author

THE way to have more and better vegetables for less work is to plan the garden in February instead of waiting until May. Every one who fails to draw a diagram of his garden is likely to be swamped by the spring rush. Without a plan you are sure to plant too much of one thing and not enough of another. The only possible objection to planning the garden in winter is that it may "seem like work." The obvious reply is, "Don't make work of it. Enjoy it." If you have never tasted the joys of planning, begin now.

HOW TO RUN THE ROWS

Let us consider first a medium-sized garden with a southern exposure and protection from the north winds. This, of course, will be the earliest garden, for it gets all the sunlight there is. (See Fig. 8.) If the rows run east and west, the rays of the sun strike only the southern side of the row. If, however, they run north and south, the sun's rays strike the eastern side of the row in the morning and the western side in the afternoon. The latter method seems to me to produce a more even and vigorous growth. Again, suppose the rows are planted east and west, the



8. To prove that the ideal exposure for a garden is toward the south; also that the sun's rays strike every portion of rows that run north and south, while only the south side of rows running east and west get the benefit of the sun

southern sun of summer will continuously draw the rows one way, southward only, thus pulling them out of plumb. This is another point in favor of north-and-south planting, for rows thus planted are drawn eastward by the morning sun, and this lean is corrected by the afternoon sun.

If the garden faces north (and by this I mean is unprotected from the north winds), would it not be possible to protect it on the northern and western sides by a hedge of privet, a vine-covered trellis or a grape arbor? The latter in this case would give the greatest amount of protection if made in the old-fashioned lattice style. Even a high board fence can be made a thing of beauty by covering it with vines, particularly climbing roses.

If your garden faces southeast and is entirely cut off from the western sun (Fig. 9), it will be better to run the rows northwest and southeast in order to get the greatest duration of sunlight, for in this situation every available ray is most valuable.

No matter how your garden may face, no matter what angles, curves or dimensions it may possess, you will see at once and very clearly the best thing to be done when you have it before you on paper with the area reached by the sun's rays laid out upon it.

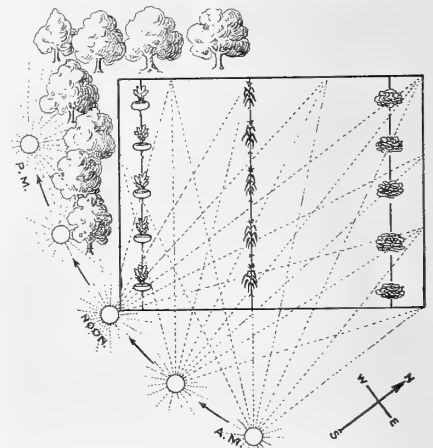
A "COMBINATION" GARDEN

Suppose you live in the suburbs upon a lot not more than 50 x 100 feet or even less. You can surely spare a little ground for a vegetable garden. I know of one such dear little home plot and this is how it was laid out. (Fig. 10.) It is a corner lot. On the west and south run the streets of a suburban village, with broad curbs and stone sidewalks. It is a fenceless town; hence it was easy to coax a lawn right down to the walk. A few evergreens were dumped in a procession at the southwest corner, an unhappy dogwood (naturally a shade-loving tree) was trying to live on the sunny west side, while fruit-trees were located on the almost sunless eastern side of the house. It was undoubtedly a creation of some landscape gardener who

had to a certainty missed his calling, but he accidentally did one thing very wisely, and we forgave him. As he had exhausted all available space except the back-fence line, and had a number of small arbor-vitæ plants, he placed them along the north boundary, and they "did the rest," soon forming a beautiful, close and therefore effective wind-break, which was of great service to the garden.

A detailed plan of this garden is shown in Figure 11.

The first back bed at the eastern end was sown to lettuce and radishes, half and half; the second bed, beets; the third, beans; the fourth, tomatoes; the fifth, corn. The front beds were full of flowers which screened the low-growing vegetables, while the taller ones made a fine background for the gay colors. These were the flowers used, all of them showy kinds, suitable for cutting: The first bed at the eastern end, phlox; the second, nicotiana; the third, nasturtiums, climbing over a small fir-tree; the fourth, scabiosa; and the fifth, verbenas. The western boundary of the garden was an althea hedge against a wire fence. The fence was covered with



9. Showing why a garden that faces southeast should have its rows run northwest and southeast

scarlet runners, making a gorgeous bit against the street. At the front of all these beds was a strip of moss, curled parsley—backed by dainty Shirley poppies, making one of the most beautiful combinations imaginable.

There were enough vegetables of the kinds planted (except corn; and in my estimation it takes a large plot indeed to raise enough corn) to satisfy a family of three.

TWO CROPS ON THE SAME GROUND

If you are wise you will plant late corn after the lettuce and radishes are out, and more lettuce, corn salad, or endive after the beans are out. Then if you care to raise late crops, cabbage, cauliflower or spinach could go in where the early corn grew, and in this manner make the small patch earn its living and pay big dividends.

Here is a plan for successional planting (Fig. 12). We will consider annuals only, the idea being to have the land in use all season. The first sowing of each row may be as follows: Row 1 is to have radishes and lettuce, either one-half or one-third of the row radishes, as you choose; row 2, beets; row 3, green beans and peas; row 4, early corn; row 5, tomatoes; row 6 (not shown), parsnips and carrots. When the early crops are out of row 1, it may be sown to middle-season corn. When the early beets are out of row 2 (or perhaps you have sown one-half this row early and one-half late beets), it may receive egg-plant or cauliflower. Row 3 may have summer lettuce or kale; row 4, lima beans; row 5 may have cabbage planted between the tomatoes, as the latter will be out in time to allow the former a chance to head. Carrots do not come out until late, and parsnips must be frozen to be at their best.

It is well to remember one thing in making this layout—do not let two vegetables of the same botanical family follow each other; for instance, lima beans should not follow green beans or peas, as these are all of one family and draw about the same elements from the soil. All members of the cabbage family are likely to have the same insects and diseases.

A VEGETABLE GARDEN ARRANGED FOR BEAUTY

There is another suggestion in regard to planting I should like to make, and that is a Japanese or "radial" garden. Take the center of your garden, if it be not too large and of the proper proportions, and run the rows from this central point. This will give a vast number of opportunities for combining color effects, always considering relative heights and methods of growth (Fig. 14). The long rays must be spaced as close together to the central ring as the several vegetables will allow. I should think two feet would be a good average. If the rays are long, a wide divergence at their outer ends will result; short rows could be planted between for a part of the distance.

The center of the circle should be occupied by either a perennial or a plant that lasts late in the fall. Cardoon, that beautiful, silvery, cut-leaved plant, would be very handsome; parsnips, rhubarb, kale would be good.

The center or orb of this Japanese garden

plan offers a capital opportunity for the exercise of ingenuity and individuality. One or more plants of broccoli surrounded by a circle of beets would make a striking effect. The tall, gracefully striped and variegated kales might be encircled by parsley or a large hill of corn, tall-growing, or the dainty variety hedged in by cabbage. In this case, the corn could be replaced by a transplanting of Sakurajima radish.

A lima-bean wigwam of poles, supported at the base by lettuce or Pe-tsai (Chinese cabbage), would please many. The combinations are endless, and a high or low center effect could be obtained to suit one's fancy.

Ray 1 could have lettuce and radishes (it runs due south); ray 2, peas; rays 3 and 7, corn; ray 4, beets; ray 5, scorzonera; ray 6, beans; ray 8, onions or leeks. The intermediate rows could be planted every other one to celery, and the others to parsley, carrots, Sakurajima radish, and parsnips. These all last well into the autumn, so that the garden would always look well.

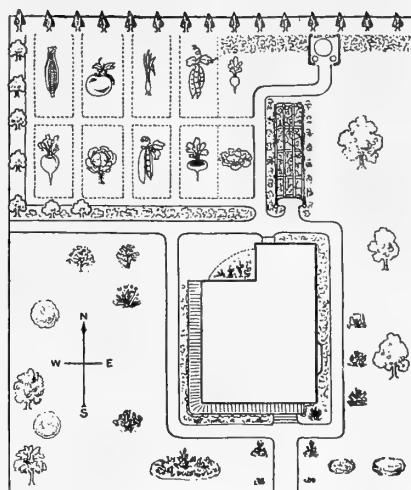
THE FERTILIZER PROBLEM

There is one thing, however, that must not be forgotten, and that is the fertilization of the soil after each crop has been taken out and before another one has been put in, for you can't expect to grow good cabbage when the corn has taken sufficient food from the earth to enable it to grow a stalk six feet tall and mature two to six ears of corn!

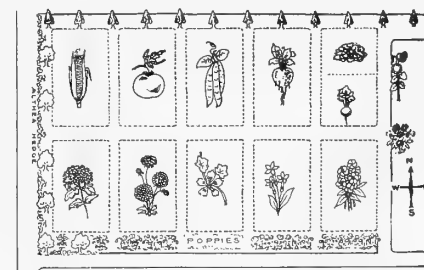
Suppose you have had a vegetable garden in the same spot for many years, and have given but scant fertilizer in that time, say, perhaps, nothing but manure, and you are wondering why your vegetables do not grow as rapidly and mature as perfectly as formerly. Could you spare that garden for one summer and sow it with cow-peas, soy beans or red clover, and plow that crop under in the autumn? These three varieties of plants (and there are many more like them) gather great quantities of nitrogen from the air. They have very long roots, and some possess little knobs, real nitrogen reservoirs, that store away the nitrogen which the leaves draw from the atmosphere. Nitrogen is the most difficult and expensive substance to obtain in fertilizer form, and is greatly sought after; it is used not only to develop quickly such crops as lettuce, but to force for a more prolonged period corn, beans, celery, etc. The readily soluble chemicals, such as nitrate of soda, are of course excellent, as they are quickly utilized by the plants, but because of their easy solubility they are soon washed away by rains. Moreover, they require moisture to render them available. The nitrogen storers are utilized to a greater extent each year. Their power is to absorb nitrogen from the air and to distribute it throughout the soil through the medium of their roots. When the stalks of these crops are plowed in, the nitrogen that they have gathered will be released as the plants decay. It is the cheapest way to buy nitrogen.

"VACCINATED PEAS"

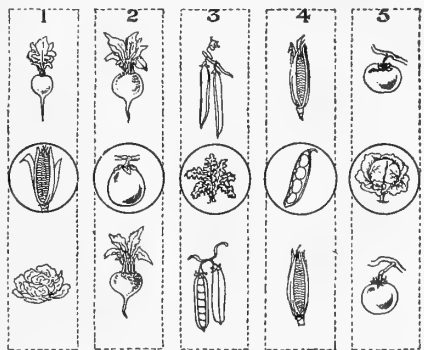
And as wonders never cease, the scientists have now captured the bacteria that attract



10. A suburban corner lot, the best feature of which is the windbreak of arbor-vitae that shelters the garden. This garden will raise enough vegetables for a family of three, except corn and potatoes

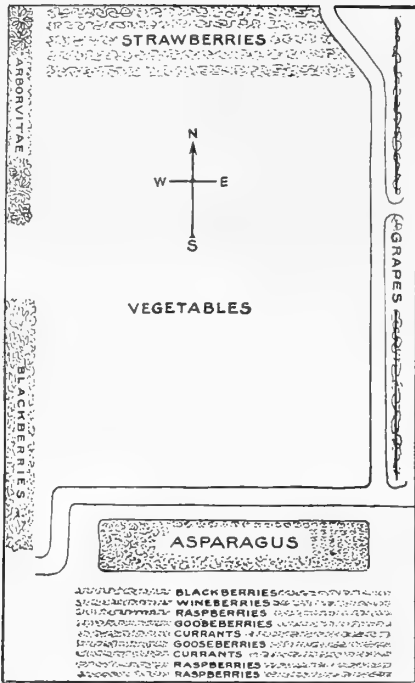


11. Detail of Figure 10, showing vegetables in the northern tier of beds and flowers in the southern tier. The contents of each bed are given elsewhere



12. Two crops on the same ground. The vegetables at the ends of the rows suggest the first planting; those in the middle indicate the succession crops

or urge the plants to draw the nitrogen from the air through the leaf and stalk into the root system. The bacteria triner cultivates, tames or grows these small creatures, dries them, gives them to us to inoculate or vaccinate the seed or land, so that these plants will draw more nitrogen into the soil than they normally do, because, as in other manufacturing concerns, the supply keeps pace with demand. The Government gives us



13. The author's garden, showing the windbreak at the northwest, the perennial crops at one side as far as possible, and a big space free for plowing

"yeast cakes," as we call them, so there is no outgo but a postage stamp's value, and the returns are great indeed.

I tell you what I think I will do. When our garden is run out and has to be sown with legumes (that's what they call these doctor plants), I will ask my neighbors to let me raise all the peas the entire community needs that year, and I will sow the whole garden to "vaccinated" peas and supply the neighborhood; then the plants can be plowed under in the autumn. Try this, and the following spring sow bone meal and wood ashes, and a little lime if the soil has not had any for three or four years, and the vegetables of that season will say "thank you" so hard you will be able to carry off all the first prizes at the County Fair. (Fig. 15.)

THE ADVANTAGES OF A COMPOST HEAP

Suppose you have a new place where there never has been a garden. Choose your garden spot carefully, have it plowed up and harrowed, take out all the sod you can—but don't, I beg of you, throw it away, for it is better than a gold mine. Take the sod to some out-of-the-way corner of the place, turn it root-side up and leave it. I can hear you say "I have no out-of-the-way place, and it would look so terrible here all summer." Never mind. Wait a bit. We will fix that in a satisfactory way to a surety. Keep the good work up by throwing the waste leaves of cabbage, lettuce, beets, outside stalks of celery, potato tops, bean, pea, and tomato vines upon the pile. It is easy, with the compost heap near the garden, to throw all this valuable material where it will

do the most good, and while keeping the garden looking neat you are adding heavily to your working capital and disposing of rubbish at less expense than in any other way. Throw the autumn leaves on it, also waste from the kitchen, if you have no chickens that will turn it to good account. Turn the heap over in the spring, sow a few morning-glory, nasturtium, or wild cucumber seed in and around the pile, and you will have a thing of beauty and a joy all summer. When the sods are rotted they are the finest kind of fertilizer, for they are the substance of the soil for years and years, and you are returning now the bulk of that which has been taken away as long as those particular sods have been growing.

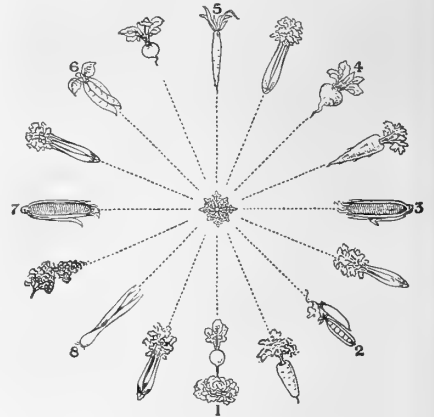
Why can't you leave them in the garden? Because they will grow if they get the faintest chance, and you will be busier pulling up grass than you care to be that first year, and remember that a good compost heap cannot be overvalued.

SMALL FRUITS

Let us take up small fruits for a moment, for no garden is complete without them. Blackberries, raspberries, gooseberries and wineberries are all "prickery," as the children call them, and should have a place to themselves, for it is very annoying, as well as mildly painful, to gather or to cultivate vegetables in close proximity to the thorns. I think it wise to give them a place all to themselves, somewhere else in the grounds, or, if territory be limited, plant them as the border to the vegetable garden. If your garden is inclosed by a fence, this opens up excellent possibilities, for a fence is a support and training-ground for your blackberries, raspberries and wineberries. Moreover, they should have a fence to keep them in good

shape and within bounds anyhow. So if you do not care to use this inclosing medium for peas, beans and tomatoes, by all means train berry vines upon it.

The low-growing, virtually evergreen strawberries, with their beautifully formed leaves, are in some respects very human, their chil-



14. A suggestion for a Japanese or radial garden, in which the vegetables are to be carefully considered as to color, height and decorative value

dren (the runners) are always moving away and making new homes for themselves; also relying on the good mother plant for guidance and support, which she supplies through the leading-string. This luscious berry should always have a bed by itself. Give to it as much ground as you can afford to spare, to allow the plants to remain there two years; at the end of that time, take the runners you have coaxed to take root in small pots buried in the ground close by, and start a new bed in an entirely different portion of



15. Prize vegetables at a county fair. The products of a friendly neighborhood rivalry



16. The strawberries that grew in the lee of the arborvitae hedge were the earliest in the neighborhood



17. The beginning of a compost heap—sods, leaves, old vines, and tops



18. Some of the flowers that screened the vegetables in the garden sketched in Figures 10 and 11

the garden. They are heavy feeders, and the vines do their best and heaviest bearing the second year, although they will yield a fair crop the third.

THE AUTHOR'S GARDEN

May I sketch our garden for you, laying out the berries? (Fig. 13.) This is only one of many plans, but it seems to be entirely satisfactory for our situation with its southern exposure.

Remember that bush berries are fairly high in growth and should not shade the rest of the garden too much, and also keep in mind the fact that strawberries should be sheltered somewhat, if you wish early fruit. Of course, currants should go among the gooseberries, for one could not get along without their piquancy and brilliant coloring, especially if one take pride in one's jellies.

Sometimes there are gardens shaded from a valuable amount of sun by a row of trees. This can at times be remedied by topping the trees, which will stimulate the trees' growth, keep them fuller and in better form, and at the same time let the sun over them into the garden.

THE PROBLEM OF INCLOSING A GARDEN

Is it desirable to have your garden inclosed? Is it necessary to keep out chickens, dogs, or children? I hope never your own children, for garden life means a fuller life for them, and being in mother's or father's garden will make the sowing, transplanting, thinning, and weeding so natural that their own garden will come as a matter of course. However, if the garden must be inclosed, let me offer a suggestion. Make a fence of locust posts, on which stretch one-inch-mesh chicken-

wire. There may be a top and bottom rail, or not. It will furnish you a first-class pea, bean, and tomato trellis, and should a part be too shady for vegetables, plant wild cucumber or morning-glory, which will sow their own seed year after year and be no trouble to you, but, instead, a joy forever; or the entire fence may be made a thing of beauty by covering it with sweet peas or nasturtiums. When the peas and beans or tomatoes reach the top of the fence, which should be four feet, I think, cut the tops off and force the strength into the fruit. We use a combination of flowers and berries for the garden's division lines instead of a fence, currants, gooseberries, black-caps, and even the low-growing strawberry being utilized, and our friends at least always speak of the neat, well-kept appearance of our little garden plot.

All the Foxgloves Worth Cultivating—By F. A. Waugh

Professor of Horticulture
Amherst College

THE FIRST OF A SERIES OF "LITTLE MONOGRAPHS" WRITTEN BY SPECIALISTS FOR THE EXPERT GARDENER, WHETHER AMATEUR OR PROFESSIONAL, AND DESIGNED TO BRING OUR KNOWLEDGE OF EACH SUBJECT UP TO DATE

Photographs by the author and HENRY TROTH

[EDITORIAL NOTE—When Professor Bailey completed his monumental Cyclopaedia of American Horticulture, he announced that he considered it only a beginning; that his work was largely designed as a record of American horticulture at the beginning of the twentieth century, and that he hoped the Cyclopaedia would be considered as a basis for further improvement. THE GARDEN MAGAZINE offers its columns to those who are in a position to contribute something to the advancement of horticultural science, and would be glad to co-operate with those who have investigations under way. Correspondence is invited. We particularly wish to hear from those who are growing complete collections of anything and those who are creating new varieties.

As a beginning, THE GARDEN MAGAZINE proposes two new things, which it is hoped will be considered improvements; first, that the readable or human portion of a monograph should come first, and the technical portion, which is only for reference, last. Second, that every species in cultivation should be provided with a "common" or English name, which should be passed upon by a committee representing all interests, and published in an official and formal way. The ornithologists have provided every bird with a vernacular name, to the great benefit of bird study; each wild flower in Britton and Brown's "Illustrated Flora" has an English name, and the time is now ripe for giving one to every cultivated plant.

Professor Waugh's article is the first of a new type of horticultural writing, in which the point of view is primarily human and horticultural, not the dry-as-dust botanical. The old style "alphabetical monograph" merely describes species; it does not distinguish them. This new department will do both, and hopes to be interesting also, as well as practical. The new plan combines the convenience of the alphabetical arrangement with the accuracy of the "key" arrangement, which alone can give one a grasp of the whole genus in the shortest possible time.]

THE common foxglove is, or ought to be, one of the twelve most popular "hardy perennials." About the second week in July, when the foxglove is the queen of the border, there is a certain moment when each stately spire is at its best—the moment when the lowest flowers are quite open and the upper ones successively smaller, until the topmost buds are merely little dots of green.

It is impossible to resist the spirit of the foxglove; its whole expression is one of aspiration. Every one who has the rudiments of an imagination in him thinks at once of church towers and bells. Although the foliage is rather coarse, the whole plant is one of the stateliest of perennials, having the

same sort of formal beauty as the larkspur, which enjoys a later reign in the same border.

The foxglove is one of the commonest English wildflowers, and there are some localities in America where it has run wild, but not in great masses as in Europe.

The common foxglove has two distinct uses. The typical, or purple-flowered form, is best for wild gardens or for those hardy borders which are not kept up to the highest mark of neatness. In such places the foxglove "self-sows" and finally makes glorious colonies. But for the most refined borders the appropriate thing is the gloxinia-flowered strain—so called because the flowers are larger and spotted in the throat like the

gorgeous gloxinias of the greenhouse. For a certain chaste effect the white-flowered variety of this strain (*Digitalis purpurea*, var. *gloxiniiflora alba*) is unrivalled in the genus. It is difficult to keep these refined foxgloves up to their best, and many people complain that their high-priced varieties revert to the original type. The explanation usually is that the uncommon forms have not had the uncommon treatment they deserve, as will be explained forthwith.

The common foxglove is usually a biennial, which sometimes lasts three or four years, and the seeds are generally sown in spring. Unless well cared for, they may not make large enough plants by autumn to live out-



19. The plant known to the trade as *Digitalis grandiflora*. It is probably *D. ambigua*.

doors all winter, and they do not flower until the second year. The safest way, and the only way to get the best results from the choice strains, is to sow the seed in August or early September, carry the plants over the winter in coldframes, and set them outdoors the following spring, when they will flower splendidly. This saves a year, in a way, making the foxglove a sort of annual. It is worth all the trouble, if any one wants something better than his neighbors.

Of the eighteen known species, not more than eight are worth cultivating, and of course the common one is best. The second place I should give to the woolly foxglove (*D. lanata*), but the whole collection is worth growing (if you like to grow "collections"), and inasmuch as seeds can be cheaply imported from Germany and France the whole set could be had for a dollar.

All the kinds are easily raised from seed. Sow these in a warm bed or flat, and prick off the young plants when two or three inches high into frames, nursery rows, or permanent borders. When once established, the perennial kinds can, of course, be divided with a spade.

When the seed is sown in spring, the plants should be grown one summer in the nursery before being transplanted to the border.

The common foxglove is a very valuable plant for old-fashioned gardens (which are



20. Spires of the common old-fashioned foxglove (*Digitalis purpurea*). It grows two or three feet high and has purplish flowers about two inches long. The throat is spotted

just now the new fashion), for borders and for park bedding. In most cases they should have a good background, such as trees, shrubbery, or a wall. They should not be planted with anything which overtops them, and great care should be taken not to bring them alongside other flowers with dazzling colors, especially reds. Generally they look best when standing rather by themselves, or in borders where they plainly predominate.

INDEX TO SPECIES OF DIGITALIS

Species in black-faced type; synonyms in *Italic*; varieties in Roman.

- | | |
|--------------------------------|------------------------|
| ambigua , 6. | lanata , 7. |
| ferruginea , 5. | Mariana , 2. |
| gloxiniæflora , 1. | monstrosa , 1. |
| gloxiniæflora alba , 1. | ochroleuca , 6. |
| grandiflora , 6. | purpurea , 1. |
| laciniata , 8. | Sibirica , 7. |
| laevigata , 4. | Thapsi , 3. |

HOW TO USE THE KEY

If you have a flower and want to know whether it is correctly named (probably one quarter of the trade names are more or less inaccurate), the "key" will help you to settle the matter in two minutes, without reading eight tedious descriptions which don't distinguish. First choose between the A's, then between the B's, and so on. The intention also helps the eye. A common-sense key for horticulturists should be based on garden characters, such as the color of the flowers, the season of bloom, the height of the plant, etc. But these are often worthless unless checked by technical botanical characters, and these are given in the descriptions below, using as far as possible the English language instead of the botanical.

KEY TO THE GARDEN FOXGLOVES

- A. Color of fls. purplish or white.
 - B. Plant biennial or nearly so. 1. **purpurea**
 - BB. Plant truly perennial.
 - CC. Height 1 to 2 ft. 2. **Mariana**
 - CC. Height 2 to 4 ft. 3. **Thapsi**
- AA. Color of fls. reddish brown. 4. **laevigata**
- AAA. Color of fls. yellow or yellowish.
 - B. Height 4 to 6 ft. 5. **ferruginea**
 - BB. Height 2 to 4 ft.
 - CC. Fls. marked with brown. 6. **ambigua**
 - CC. Fls. self-colored. 7. **lanata**
 - BBB. Height 1 to 2 ft. 8. **laciniata**

DESCRIPTION OF THE SPECIES

1. **purpurea**, Linn. COMMON FOXGLOVE. A biennial herb, sometimes lasting for three or four years, sometimes treated more like an annual. Height 2-3 ft.: leaves rough, slightly downy, long, irregular spatulate: flowers large, about 2 in. long, from white to purple, or yellow, spotted. Var. **gloxiniæflora**, Hort. is larger, more robust, with larger flowers and longer spikes. This is the best form for cultivation. Var. **gloxiniæflora alba** is white. Var. **monstrosa**, Hort. is a monstrous variety, having a big bell-shaped blossom at the apex of each raceme.

2. **Mariana**, Boiss. SPANISH FOXGLOVE. Perennial, 1-2 ft. high: flowers rose or reddish; corolla bearded on the lower part inside and marked with brownish-red spots. Spain.

3. **Thapsi**, Linn. MULLEIN-LEAVED FOXGLOVE. Perennial, 2-4 ft. high: leaves oblong, rugose, tomentose, undulate-crenate, decurrent: flowers purple, with blood-red spots. July and August. Western Europe.

4. **laevigata**, Waldst. SMOOTH FOXGLOVE. Perennial, 2-3 ft.: flowers scattered, glabrous, corolla fulvous, reticulated, lip white, ciliated: leaves linear-lanceolate: radical leaves obovate-lanceolate. July. Danube and Greece.

5. **ferruginea**, Linn (*D. aurea*). RUSTY FOXGLOVE. Biennial, 4-6 ft. high: stems very leafy: leaves glabrous, sometimes ciliate: flowers rusty yellow, more or less reticulate, downy on the outside; lower lip of corolla ovate, entire, bearded. July. Europe.

6. **ambigua**, Murr. (*D. grandiflora*, *D. ochroleuca*.) LONG-FLOWERED FOXGLOVE. Perennial,



21. The woolly foxglove, *Digitalis lanata*. It is the second best species and deserves to be better known

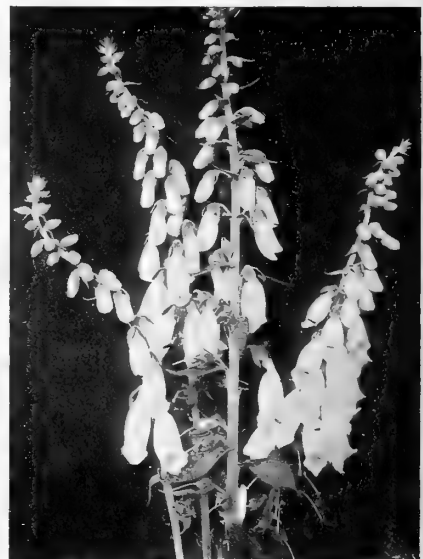
2-3 ft. high: leaves ovate-lanceolate, coarsely serrate, sessile, downy underneath: flowers 2 in. long, yellowish marked with brown. Europe and W. Asia.

7. **lanata**, Ehrh. (This is perhaps the same as *D. Sibirica*.) WOOLLY FOXGLOVE. Perennial, 2-3 ft.: leaves oblong, ciliate: flowers 1-1½ in. long, grayish or creamy yellow, downy in a dense, many-flowered raceme; bracts shorter than the flowers. July and August.

8. **laciniata**, Lindl. CUT-LEAVED FOXGLOVE. Perennial, 1½-2 ft.: flowers yellow, downy, with ovate bearded segments, in racemes, bracts shorter than the pedicels. June. Spain.

CHARACTERS OF THE GENUS

Digitalis. (Family *Scrophulariaceae*.) A genus of hardy biennial or perennial herbs numbering about eighteen or twenty species, of which only one is commonly cultivated in gardens. Numerous hybrids have been made, some of which are apparently cultivated under species names. Flowers are white, yellowish, or purplish, sometimes spotted, borne in tall racemes; corolla tubular, funnel-shaped, not quite regular, 4-lobed at the top, the lobes unequal and oblique, the upper segment shorter than the lower segment or lip: leaves usually in a large tuft at the base with a few much smaller leaves along the stem.



22. The improved or gloxinia-flowered strain of foxglove, which requires special culture. The best results are attained by sowing in autumn and keeping young plants over winter in coldframes

Originality in Gardens—By L. H. Bailey

Director of the College of
Agriculture, Cornell University

WHY SO MANY AMERICAN GARDENS ARE COMMONPLACE OR UNIMAGINATIVE—SUGGESTIONS FOR MAKING THEM DISTINCTIVE—FIVE GARDENS THAT EXHIBIT CREATIVE GENIUS AND SHOW THE POSSIBILITIES OF ADAPTATION

ORIGINALITY in gardens, as in everything else, may be good or bad. One of the most "original" gardens I ever saw was in a little town in southern Michigan. It was a mere front yard, I suppose not more than fifty feet square. It was an intricate geometrical pattern, as clever as the design of a carpet, with diminutive splashes of gravel, knots of box, and shear-made treelets. It was entertainingly interesting and indescribably ugly.

The genius of true originality is as rare as common sense. To be original and not to be self-advertising may be called the rarest of attainments. In our efforts to be unlike others we become actors; and the pity of it is that everybody knows that we are acting. The true originality is not conscious of itself. Perhaps my reader will be able to make some application of these handsome sentences: if so, he is to be congratulated. I meant only to say that the best originality in gardens consists merely in working out to perfection some idea that will exactly adapt the place to its conditions and surroundings.

The best window-garden I ever saw was made by a woman who probably knew less than a dozen kinds of plants. The place was a three-window bay, of which the center window was left bare of plants. The two side windows were staged with well-grown geraniums, oxalis, othonna, farfugium and two or three other very common things, and festooned with German ivy. The poorest window-garden I ever saw was my own, with plants that every one knew were bought of the florist.

The above example gives the key to good original gardens—the garden must be one's own in the sense that one makes it or directs it so that it shall express the very spirit of the place and of the owner.

Last summer I drove through a beautiful well-wooded road in southeastern England. At one place the rear of a house stood close against the highway, presenting no unusual point of interest to the passer-by. I drove in at the gate, and behold! a garden such as poets dream of! And in truth it is a poet's garden. An open space of velvet lawn, sides piled high with lusty growth of tree and shrub and herbaceous plants, in the distance wide sweep of farm lands, at its back the fine old English residence set with pleasant vines—this was the picture. I thought I had never seen so choice a bit, and yet there was nothing over-wrought or high-strung in it. I saw many beautiful plants, but the effect of the whole was supreme. It was as truly a picture as if the image of it had been put on canvas. If the reader has read "In Veronica's Garden" or "The Garden I Love," he will know what garden I mean.

This garden illustrates a fundamental difference, I think, between the English and

the American garden. The Englishman's garden is well-nigh as essential as his house. It is like an extra room to the residence. It is for the family rather than for the public. It therefore works itself into the developing consciousness of children, and garden-love becomes as much a part of the person as books and furniture and music do. With them, the love of the soil is bred in the bone. Englishmen of all classes love farming and gardening. In this respect our conglomerate people are centuries behind the English. The American garden is likely to be all in the front yard. It is usually of the look-at-me kind. It is made for the public to see. This may contribute to public spirit and civic betterment, but it loses in originality and vitality.

One of the most original gardens I know is that of Mrs. Annie L. Jack, in the Province of Quebec. Mrs. Jack is herself a practical garden-lover—this is essential to any originality in any garden. Her original materials were crude and austere—a severe climate, an open piece of land far in the country. It is a farm-wife's garden. Against the low stone house she laid out an acre in parallelogram, with the long way extending from the residence. The ground slopes slightly from the center to the sides. Trees for shelter were planted to the windward. On the opposite side were planted such hardy fruits as would thrive in the climate. Between these for many years vegetables were grown, being gradually forced into the freer inward borders as the trees and grape-vines developed. The center of the place was made a grass space, bold and generous in allowance. The borders are used mostly for flowers, with a liberal admixture of interesting shrubs. It will be seen that the general outline of the garden was rigidly determined; but there has been enough elasticity of details to allow of new planting schemes every year. From first to last it has been an experimental garden. The novelties here find place until they prove or disprove themselves, but there is always such a preponderance of staple things that the garden as a whole is never disappointing. In the secluded and sheltered nooks plants far out of their range may be grown. I saw a thriving small tree of *Magnolia stellata*. The reader will note that this is not a fruit-garden, or a vegetable-garden, or a flower-garden. It is merely a garden, in which all the aesthetic and practical desires may be satisfied. This garden has been profitable. Fruits and vegetables have been sold. The children worked in it and have learned to love it. One of the boys had a "garden" of his own when three years old. I was greatly impressed with the influence that this garden has had on the attitude and ideals of the family. If I am not mistaken, it has had an intellectual influence like a school and a spiritual influence like a

church. Perhaps my reader has read homelike pieces of prose and verse that have come from this garden.

In the western part of San Francisco is a garden as unique as Mrs. Jack's, but in every way a contrast to it. It is a garden that appeals to you because of its interesting plants, and not as an organism. Mr. Abraham is a passionate lover of anything that has roots and leaves. He will cherish any sprig from any part of the world, and, what is more, he will make it grow if there is a germ of life left in it. He will put this plant wherever there is an unoccupied inch of ground—alongside a walk, in a corner by a crooked little greenhouse, in a pot in some out-of-the-way place, or in a row in the middle of the lot. Everything is full of plants—roses, palms, fuchsias, cacti, and a thousand things all growing in cheerful abandon. The very lack of arrangement is its charm. If it were "laid out" it would be as uninteresting as an antiquarian shop with mahogany counters and plate-glass windows. The place is the man. I would not change an item of it.

I like best those amateur gardens that seem to be a real part of the home. I have another such in mind; it is in central New York. It is a two-acre space, practically square. It lies a short distance back of the residence, and is bounded on the house side by a high-sheared evergreen hedge. When you visit this family you may sit in the drawing-room or you may walk straight through the house and through a gateway in the hedge and into the garden. There you find yourself in a little world of your own—the hedge in front and double rows of wind-break hemlocks and pines on the far boundaries. The walk leads straight on through well-clipped sodland and between entertaining rows of all manner of pleasant herbs, old and new. You may digress to a seat or two under trees, or keep straight on to a stone seat against a short hedge at the very end of the walk. At this seat, or at the front entrance to the garden, you may take side-paths to the pine-belt, and there walk in a noble avenue made by the duplicate lines of trees. As you turn the farthest corner in this avenue you come on the vegetable garden, itself occupying one of the quarters of this charming place. You will find no elaborate display, no greenhouse, no corps of gardeners. It is only a quiet garden-space set off from a country of farm land and attached to a refined home.

Pope long ago wrote that the gardener should "consult the genius of the place in all." This is what makes the garden original and worth the while, because the "genius of the place" is different in every garden, and the expressing of it with plant materials portrays the capability and personality of the gardener.

The Training and Pruning of Grapes—By John Craig

Professor of Horticulture
Cornell University

Photographs by L. H. BAILEY, H. B. FULLERTON, and ARTHUR HEWITT

ONE of the earliest recollections of the writer on grape-training matters was associated with a whitewashed board fence, covered or nearly covered with a luxuriant vine-growth thickly interspersed with huge clusters of black grapes. These grapes were in the garden of one of the residents of the little town of Niagara-on-the-Lake. The



23. Fan system—before trimming. This system is chiefly used in sections where vines have to be laid down and covered in autumn

variety was Black Hamburg. It was the wonderment of the community and the delight of the owner, Mr. Pafford, who was then mayor of this somewhat ancient, overgrown Canadian village. Think of growing and ripening Black Hamburg, a hothouse grape, in even the most favorable portion of Ontario! Mr. Pafford selected a warm place and made it warmer by cutting off the north winds with a board wall. He concentrated that still more by whitewashing this tight, high board fence on the south side. His grapes were carefully pruned so that each vine should have just so many fruit-bearing buds, the fruit so thinned that each cane should have just so many bunches, and the



24-25. Post training. This system is satisfactory only where there is plenty of heat to ripen the grapes, and is best for weak-growing varieties

berries thinned in the bunch so that all could develop fully. Hamburg was not the only European grape which Mr. Pafford grew. Golden Chasselas and Black Muscats also decorated his boundary line. Nor did he stop with these. Figs in variety were grown in this wonderful garden. Exhibits of these and of the grapes were made at the World's Fair in 1893 and caused people to open their eyes and ask questions. Mr. Pafford's Hamburg grapes will live in the history of that part of the country.

Of course, it goes without saying that the grapes and figs were taken from the trellis in winter, laid on the ground and well "happed" up with soil, forest leaves and other mulching material.

The amateur can often take advantage of walls upon which to train grapes; he can also use grapes for covering unsightly objects. They are exceedingly tractable and plastic by nature, and accommodate themselves to apparently difficult situations. The training of grapes is one thing. This means the adopting or choosing of a certain method of growing them. Whether the grower shall lead out two arms at right angles, and in opposite directions from the upright stem, and from these direct parallel upright canes; or whether he shall lead out in radiating fashion several canes from the base; or whether he shall lead long canes up over an arbor for the purpose of completely enshrouding it, are matters of training.

The pruning of grape-vines consists in cutting back the right amount of the current season's growth—the amount which experience says a grape of a certain habit of growth and certain amount of individual vigor should respond to properly. The pruning of grapes is a simple matter when their habit of growth is understood. We prune either to check or stimulate vigor, to encourage fruit production, or, on the other hand, to discourage it.

The fruit of all varieties we deal with in the North and East is borne on the wood produced during the current year's growth, and this wood springs from buds produced by last year's shoots. Each bud of last year—except those which come from suckers or base shoots—is a promise of a fruit-bearing shoot, and each shoot is a promise of from two to five bunches of grapes. These promises are not all fulfilled, but they are realized in proportion as the grape is healthy and the season favorable. It is, then, not difficult on a five- or six-year-old grape-vine to estimate with a fair degree of accuracy how many bunches of fruit we may have if we prune to leave fifteen or twenty fruit-bearing buds. With this general proposition in mind, the pruning of the grape is not difficult.

The purposes of training, on the other hand, are to dispose the grape suitably so that it may ripen its fruit evenly and well. The amateur can afford to train as his fancy dictates. The commercial grower must

train to suit his climate, soil, varieties, and the kind of labor which he is obliged to employ. In either case, the object is to produce the approximate number of fruit-bearing shoots the vigor of the variety suggests that it should carry for the best results.

The "fan system" is used most freely where vines are protected in the autumn by

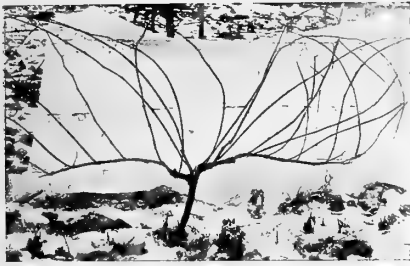


26. Fan system—after trimming. The vine should not be allowed to bear the second year after setting, and only a small crop during the third year

laying them down and covering them with soil. The canes are carried up from the ground in a divergent manner, in the form of a fan. The old canes are cut out and removed from time to time as they grow too rigid to allow of easy bending. At the close of the growing season, after the leaves have fallen, the greater number of the canes are cut back to the last bud. A few of the strongest are left, in order to carry the fruit to a greater height upon the trellis.

There is a tendency on the part of the grower who prunes after this fashion to allow too much wood to remain on the plant in the autumn, especially when it is young. The vine should not be allowed to bear the second year after setting out, and only a small crop the third year. I realize that instructions of this kind are much easier given than understood and carried out. A heavy crop of fruit borne by young vines the third year after planting will sometimes ruin the yield for two or three succeeding years, and occasionally destroy the vines. The prospective crop may be more or less accurately estimated by multiplying the number of buds by two; this kind of estimate may be used as a guide in pruning. The fan system aims at starting the canes near the ground, giving the vine practically several main stems.

The "high renewal" system, or modifications of it, is probably more generally adopted throughout commercial grape sections than any other. It aims at starting the head about two feet from the ground, so that the main branches are tied to the lower wire. The vine is usually started the second year with two canes striking out in Y-shaped fashion. In the fall of the same year all side shoots are cut back closely and the main canes cut back to four or five buds each. The third season, three or four of



27. Before trimming



28. After trimming



29. After trimming and tying

The horizontal two-arm system, especially adapted to sections of the country where it is advisable to give the vines winter protection

the strongest shoots springing from the center of the head are allowed to grow. In the autumn these replace the outer arms, and are in turn replaced by them the following season. The aim is, then, to renew the fruiting canes from different parts of the old wood every year. The number of buds to be left will depend upon the strength of the variety and the individual plant. Concord, Niagara and Worden will carry with safety more wood than Moore's Early or Delaware, and this is true without reference to the method employed. As the canes grow they are tied to the wires of the trellis, distributing the foliage as much as possible. It is usually found necessary to go over the vineyard two, three and occasionally four times during the summer.

The "horizontal two-arm system" is especially adapted to sections of the country where it is advisable to give the vines winter protection. Two strong canes are trained in opposite directions. The laterals springing from these are trained perpendicularly. In the autumn the laterals are cut back to short one-eye spurs. When the spurs become weak they are renewed, as is an entire arm occasionally. This system calls for a four-wired trellis, in order to properly tie the strong upright growths. Well adapted to wall or high garden trellis, the three methods of training described thus far are all on the upright plan; in those which follow the vines hang down.

The "four-cane Kniffin" is essentially a commercial system and exclusively adopted in field culture in certain parts of New York State. In this system the trellis consists of two wires. The main cane is carried to the top wire and from it an arm is trained each way on the two wires. The side canes are tied to the wires and the lower ends allowed to hang free. Several modifications of this system are in use.

We now come to over-head or arbor systems. In one of these systems (and there are many which may be modified to suit the needs of the amateur) the vines are carried up seven-foot posts and allowed to rest on cross wires, forming in this way a kind of arbor. One plan is to nail a cross-piece to each post at right angles to the pole. This extends three feet on each side. Three wires are stretched on these, one at each end, the other in the middle of the posts. The trellis is thus a horizontal one and six feet above the ground. An unbranched trunk is carried up to the middle wire and

the canes spread either side from this point. A T-shaped head is considered the ideal form. Another over-head system is known as the "cross-wire Kniffin." In this a small post six or seven feet high is set for each vine. The tops of the posts are connected by cross wires. The vines are trained up the posts, and on reaching the top four arms are trained outward, one on each wire. In the autumn the arms are cut back to six or eight buds each. The amateur may start two canes from the ground, spreading as they rise, and may depend upon laterals to cover his arbor.

"Post training" is only satisfactory where there is plenty of heat to ripen the grapes, and gives fullest satisfaction with weak-growing varieties. Four- or five-foot stakes may be used. Two or three canes are trained up each year from the ground. It is strictly a renewal plan. Much summer pruning and pinching are required to regulate growth. But on the other hand, the vines may be tucked in four by four feet apart. Delaware, Golden Drop, and Camp-

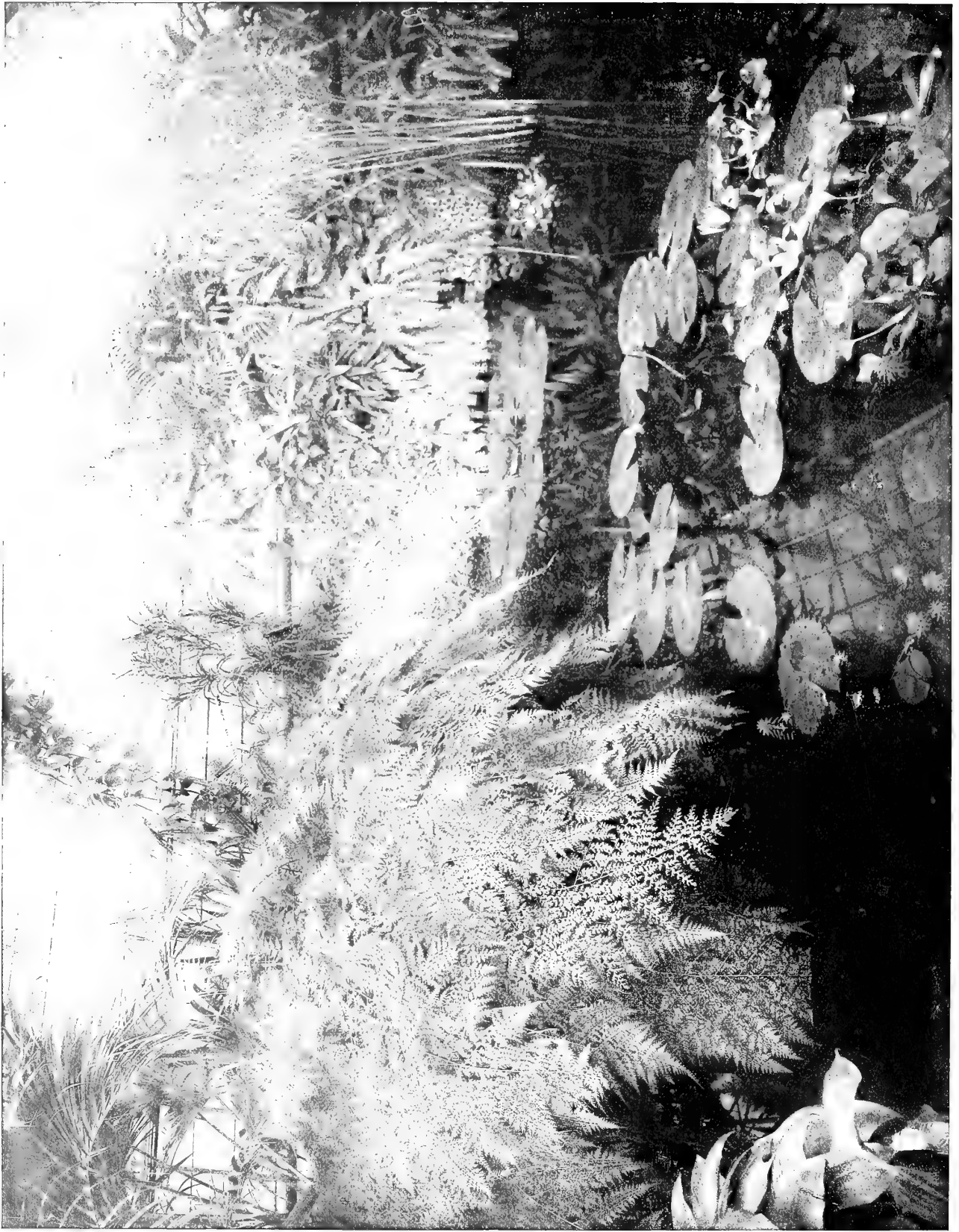
bell's Early can be grown on posts with some satisfaction.

Pruning of the annual kind may be done after the leaves are killed by frost or the wood is thoroughly ripened. When the vines are taken off the trellis, as in 30-degree-below-zero sections, the pruning is done just before laying the canes down in autumn. Where the vines do not need winter protection, the pruning may be done any convenient time during late fall or winter. It should not be deferred till the sap flows in spring, as vines pruned at this time are often weakened by excessive bleeding.

It is always desirable to remove the shoots that spring from or near the base of the vine, except when they are required for a special end. These shoots are quickly broken out, or nipped off when soft and succulent. A certain amount of shortening back is also desirable. This should not be done too early in the season. If pinched early in the growing season, a great mass of laterals is produced and the amount of work very much augmented.



30. An open arbor. The vines are trained upward in the most direct manner. A single stem from which laterals are carried off may be used, or two or more stems may be started from the ground



A WATER-LILY HOUSE THAT COULD BE DUPLICATED FOR \$4,000. IN SUCH A HOUSE, A BUSINESS MAN MIGHT GROW THE KINDS THAT BLOOM FROM 2 TO 12 P.M.

From Dining-Room to Tropics—By Frank H. Presby

A NEW IDEA FOR AN INDOOR GARDEN OF NIGHT-BLOOMING WATER-LILIES WITH WHICH TO SURPRISE ONE'S GUESTS AFTER DINNER

I DO not know of a more dreary place for the true plant-lover than the usual stereotyped conservatory. Palms, crotons, rubber plants, pandanus, and the like, are all very well in their way, but any one can see them in a better condition in any florist's store or greenhouse. Even when blooming plants, grown elsewhere to the flowering stage, are brought in to give color to such a conservatory, you are likely to have something more or less conventional and unimaginative. When I have a few thousand dollars to spend, I expect to build a conservatory that will be very different from any I have ever seen. My plan will be, by one step, to transport you from the Arctics to the tropics. It will open from my dining-room, but the door leading to it will be locked during dinner, with a curtain in front of the door so that no one would suspect it was there. After dinner, when the cigars have been passed, the curtain will be drawn aside and a button touched will light up the conservatory. When the door is opened and we leave the dining-room my guests will find themselves in the tropics. The walls will be covered with ferns, bunches of bamboos and papyrus will stand in the corners, and the middle of the house will be given to a large tank filled with the tender night-blooming lilies, the varieties that open soon after sunset and remain open until noon the next day. Many varieties will open and close for four or five days in succession. The water in the tank must be heated to give results, and the plants can be put in tubs.

I know what varieties to get, for I visited the leading dealer in aquatic plants when

the water-lilies were in bloom and made note of the kinds I liked best.

The reds I want are Frank Trelease and Rubra rosea. Of the pinks, I like best O'Marana and George Huster; of the whites, I prefer Jubilee and Dentata. Deanaiana and Kewensis, two light pink varieties, are also very good. There are no yellows.

I plan a house about 50 x 20. The walls will be of brick about six feet high, with an inside lining of tuffa stone from Berea, O. This stone is rather soft when first taken out, but hardens after it has been exposed to the air a short time. The surface is very like coral and it can be found in large as well as small pieces. It will be laid up against the brick wall with cement mortar, leaving many pockets for planting with ferns. These, with the bamboos, papyrus and water-lilies, will be all the planting. I expect the ferns to "self-sow" and multiply without any care on my part. Eventually they should cover the walls with a living mass of green.

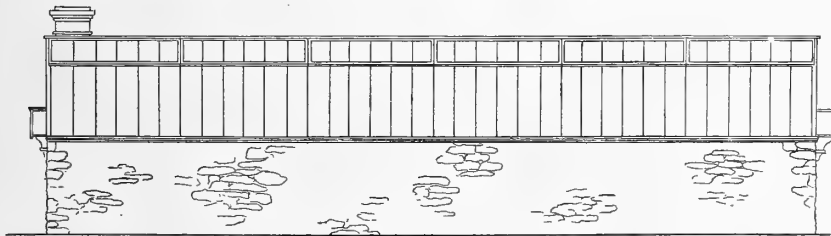
The greatest cost of running such a house will be the heating. The cost could be reduced by putting the boiler in the cellar of the house and thus do away with the chimney and boiler pit. After the ferns are planted they will flourish for many years, and the first cost of the water-lilies would not be a large item. Japanese gold-fish would thrive in such a pool. The house must be well-lighted to show the color of the flowers. I have a notion or two about a novel and effective way of lighting such a house. One of the leading firms of greenhouse architects has made the following estimate

of the cost of the water-lily house erected complete for me, at Montclair, N. J.:

The glass roof.....	\$1,025
The masonry.....	1,800
Heating plant.....	575
	<hr/>
	\$3,400

The woodwork would be clear, air-dried, red Gulf cypress. There would be two lines of roof-ventilating sash, each line operated independently. The masonry work would be of stone, bedded in concrete. The boiler-cellar would be about 18 x 4.

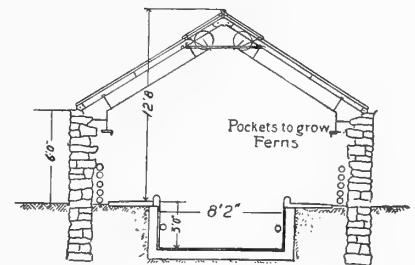
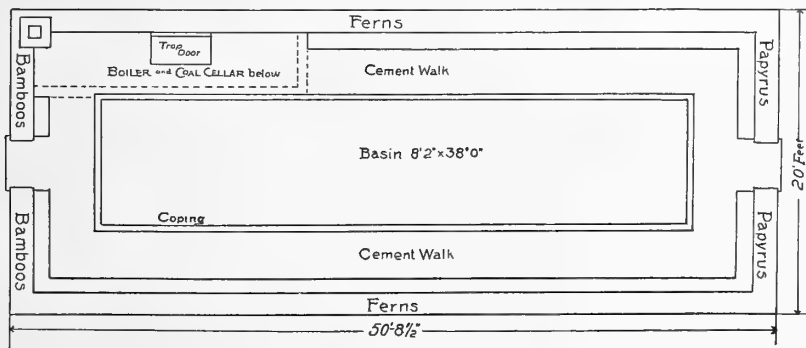
A small outdoor water-garden is just the thing to make one's place different from the general run of commonplace gardens. Why not try some hardy water-lilies this year? I have two pools in my garden, and both are a source of great pleasure to my family and myself, as well as the stranger in my gates. One is planted with water-lilies and the other with lotus. In the former we have flowers from early spring to late autumn. The colors are white, yellow and pink. The lotus blooms for a period of about two months, and I have nothing in my garden to compare with its flowers in beauty. If you are a lazy gardener, try water-lilies. They require no watering, when everything else is drying up, and no weeding at any time. They multiply so fast with me that most of them have to be dug up every spring, and the increase sells at good prices. Do not grow geraniums, cannas, coleus, and the like, when so many beautiful plants can be grown so different from your neighbors.



SIDE ELEVATION

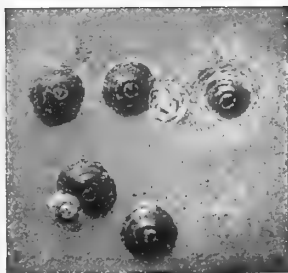


END ELEVATION

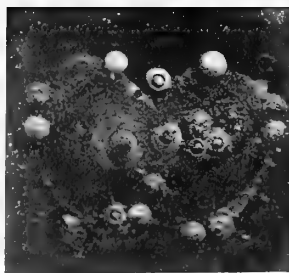


SECTION

32-35. Plans of the novel greenhouse for water-lilies which can be attached to a house already built



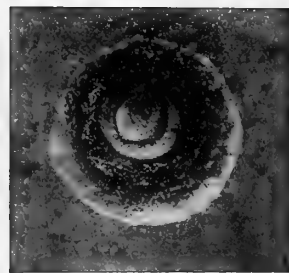
36. Several young scales in the black stage. (Much enlarged)



37. Adult female scales and young scales in the white stage. (Enlarged)



38. Male scale and young scales in the white stage. (Enlarged)



39. Adult female scale. (Greatly enlarged)

How to Kill the San José Scale—By E. P. Felt State Entomologist of New York

IS THE SAN JOSÉ SCALE IN YOUR NEIGHBORHOOD?—IF SO, YOU WANT TO DO SOMETHING ABOUT IT AT ONCE!—THE GREATEST INSECT PEST OF MODERN TIMES

THE San José scale (pronounced *Hozay*) is widely distributed in America, and especially in the vicinity of some of our larger cities, particularly New York. Its destructive powers are greatly increased by its small size and obscure color, which combine to render it extremely inconspicuous, and portions of trees are frequently covered by the pest or limbs killed before the owner is aware of any trouble.

This species may be distinguished from all others by the form of the female scale, it being grayish or yellowish gray, about one-sixteenth of an inch in diameter, and with a yellowish central elevation representing a cast skin. There are several allied, nearly circular scales, with the elevation or nipple a little to one side of the centre, which somewhat resemble this species, but fortunately these very rarely occur in sufficient numbers to cause appreciable damage. Young San José scales are dark gray, sometimes almost black, with a distinct central nipple bounded by a grayish ring. Both adult and young when located upon green twigs, leaves or fruit produce a very characteristic purplish

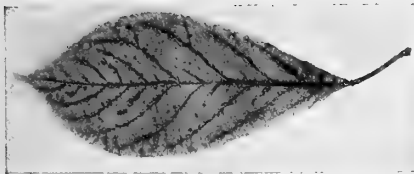
discoloration in their immediate vicinity, and for this reason the pest is easily recognized in mid-summer upon foliage and fruit, since it has a marked tendency to establish itself upon the latter, particularly apple and pear. This characteristic stain also occurs in underlying green tissues, and may be exposed by cutting the infested bark. Any abnormal, rough, scurfy appearance upon twig or branch should arouse suspicion. Sometimes this is due to abnormally developed or peculiar lenticels, and occasionally fungi produce very much the same general appearance as a bad infestation of San José scale. If living scale insects are present, the drawing of an inclined knife-blade or even one's thumb-nail over the surface will cause the exudation of a yellowish fluid from the crushed bodies of the underlying insects. There are two native species which are frequently confused with the San José scale, though both are very different. One, the apple-bark louse, has a brown, elongated, slender, pear-shaped, usually slightly curved scale about one-eighth of an inch in length. This species occurs upon many trees and shrubs, and winters in the egg. The other, the scurfy bark louse, has an irregular white or dirty white scale about one-tenth of an inch in length, which expands irregularly from a slender, yellowish tip. This, like the apple-bark louse, winters in the egg and occasionally forms a thick, dirty white incrustation.

An understanding of the life-history of this insect is essential to its intelligent control, otherwise our efforts may be sadly misdirected. The winter is passed by this insect in a half-grown condition. The overwintering scales are small, black, circular objects with a central nipple and one or two grayish rings. Vital activities are nearly suspended during the winter, being resumed with the approach of warm weather, and the insect, lying beneath its sheltering scale, begins once more to drain the tree of its sap. This is accomplished by means of a long, slender proboscis composed of several thread-like setae, which are thrust into the bark and serve as a tube through which the pest may draw its nourishment from the underlying tissues. The first out-

ward indications of life are seen in the appearance of the winged males, slight, reddish insects with two membranous, almost veinless wings, about the middle of June in the latitude of New York. The minute, yellowish, crawling young, appearing for all the world like animated specks, escape from under the protecting shelter of the mother about this time, and for a period of approximately six weeks the females continue to produce young, each averaging about four hundred, or from nine to ten every twenty-four hours. The new-born wanders forth in search of a favorable place to establish itself, and within relatively few hours (on an average a little over twenty-seven) settles at some convenient point and works its slender, hair-like beak through the bark. If it be a female, it never moves from this spot, and soon loses legs, antennae and eyes and becomes virtually an animated pump drawing the vital fluids from its host. The development of the protecting scale begins even before the young has selected its feeding-place, as very minute, waxy filaments which spring from all parts of the upper surface of the body, rapidly becoming thicker and slowly matting down to form the circular, white scale with a depressed ring and central elevation. These insects are then in what is known as the white stage, and in a few days the covering scale turns to a black or dark color with one or more lighter rings. The female scale insect requires about thirty days to attain maturity, and the male from twenty-four to twenty-six; thus the round of life may be completed in from thirty-three to forty days. Detailed studies made at Washington show that four entire generations are normally developed, and that under certain conditions there may be a partial fifth. The fecundity of the insect, in connection with its ability to produce a number of generations annually, results in an enormous increase, and in the vicinity of Washington it is estimated that a single individual under favorable conditions may in one season become the progenitor of over three billion. It is no wonder that many trees succumb to the fearful drain. The short period necessary to complete the life cycle, and the extended time during which each female produces



40. Spraying a Japanese quince with a little broom



41. The scale follows the veins. (About natural size)



42. Plum twig badly infested. (About natural size)



43. Infested plums, showing reddish discoloration

young, results in almost continuous breeding from the latter part of June till into October and, under certain conditions, November and even December. The period of activity is longer in the southern than in the northern States, and the destructiveness of the insect correspondingly greater. This species has been recorded upon a large number of food plants, but is very injurious to comparatively few. The fruit-trees—peach, pear, plum, cherry and apple—are preferred in about the order named. Currant-bushes are very subject to injury, and among ornamentals none are worse affected than Japanese quince. Lilacs, snowberry, willows and some other ornamentals are also liable to serious injury.

The method of spreading is of considerable importance, particularly in places where the scale has not become established. It is conveyed long distances almost entirely upon plants. The danger of budding from infested stock is greater, since the scale has a marked tendency to gather about buds and other rough portions of the bark. Aside from this, the pest can spread only by the crawling young being carried either by birds, other insects, winds or animals. The first three can hardly be controlled. Great care should be taken during the breeding season not to allow men and teams which have been working among infested trees to go directly to uninfested ones, since the scale is easily conveyed in this manner.

This insect is difficult to control not only because it is exceedingly prolific, but largely on account of its ability to withstand the action of various insecticides, and particularly because of its extended breeding-season. It is a sucking insect, and, as stated above, draws its nourishment from underlying tissues, consequently the application of arsenical poison or any similar material which lies upon the surface of the plant and must be taken into the stomach has practically no effect. It can be controlled only by the use of some substance powerful enough to penetrate the scale and destroy the underlying insect. A large number of materials have been employed for this purpose. The nearly naked, crawling young are unprotected, and on that account easily killed. The great difficulty of attempting to check the insect in this stage is that young are produced during an extended period, and therefore the best results have been obtained by the use of materials strong enough to penetrate the sheltering scale of the adult, and such substances are so strong that they can be applied to deciduous trees only when in a dormant condition. The best results, as a rule, have been obtained by early spring applications, preferably deferring the treatment till shortly before the buds begin to open.

A wide variety of materials have been employed, prominent among which may be mentioned whale-oil soap solution, kerosene emulsion, crude petroleum and its emulsions, and the lime-sulphur washes. The whale-oil soap solution at the rate of two pounds to one gallon of water is fairly effective though costly, and in commercial orchards has quite generally given way to other materials. Both kerosene and crude petroleum, in pure and mechanical emulsions, have been employed to a considerable extent, but in most cases they likewise have been displaced by the cheaper, safer lime-sulphur washes which, as a rule, have been most successfully employed. There are many formulæ for these latter, some of which have been used for years and others developed within twelve months.

A thoroughly safe, well-tryed wash may be prepared as follows: Take 20 pounds of lime and 15 pounds of flowers of sulphur; bring a few pails of water nearly to a boil in a large iron kettle; add the lime, following immediately with the sulphur; stir so as to intimately mix, and keep the combination boiling rapidly for at least thirty minutes, then remove and strain through a wire screen such as ordinary mosquito-netting, and dilute to 50 gallons with cold water. This is one of the simplest methods of making the wash, and when properly prepared and very thoroughly applied the results have been most gratifying, as a rule.

This material can be made in a similar manner by steam boiling—that is, forcing a jet of steam into a barrel containing the materials, and this method of preparation is a very convenient one for those possessing steam-engines or desirous of making large amounts of the wash. Some lime-sulphur washes do not require any boiling water, and a method developed by Professor Lowe, and subsequently used by Professor Parrott, calls for the above-mentioned quantities of lime and sulphur and about 4 to 6 pounds of

caustic soda to 50 gallons of water. The lime is slaked preferably with warm water, and while the reaction is in progress the sulphur, which has previously been made into a thin paste, is added and thoroughly mixed with the slaking lime. The caustic soda is then put in and water supplied as needed, the whole being stirred thoroughly. After the chemical action has ceased, the mixture may be strained and diluted as stated above.

In spite of the poor results reported from applications of lime-sulphur washes during the past season in New Jersey, we feel that in most sections of the country this material is by far the best for controlling this pernicious insect. It is not only cheaper, but when thoroughly applied appears to be fully as effective as any other, and there is far less danger of injury to the trees. The kerosene limoid spray may possibly be equally valuable, but it cannot be recommended for more than experimental work till it has been further tested. The question of what apparatus to use for spraying is also important. Select a stout, preferably iron pump, with broad valve-seats, because high pressure is needed and lime-sulphur washes are extremely caustic and therefore injurious to any but well-made pumps. A power outfit is advisable wherever extensive applications must be made. Ten to twenty or thirty feet of hose and a six- to eight-foot extension nozzle may be classed with the necessities. Most essential of all is a thoroughly reliable man to hold the nozzle, because, unless the trees are very well covered with the spray mixture, poor results are likely to follow. It is advisable, before spraying, to cut the trees back as much as possible, and in sections where the scale is prevalent, low heading will doubtless become popular because of the greater ease in fighting this pest. Another important point is to spray with the wind whenever conditions permit, making the application on the other side of the trees when the wind is blowing in an opposite direction, since it is almost impossible to thoroughly spray a tree, particularly a large one, without the aid of a favorable breeze. Spraying outfits are rather expensive, and the man with a few trees will undoubtedly find it much cheaper to hire his spraying done; and in some cases, at least, co-operative neighborhood work will prove the most economical and satisfactory method of controlling this dangerous pest.

The article on "Spraying Tall Shade Trees" in the February number of *Country Life in America* shows the kind of power spraying outfits used by progressive park superintendents, describes a new way of making a living out-of-doors, and the new type of neighborhood organization to get the best spraying done for the least money.



44. Spraying San José scale in Mr. J. H. Hale's orchard in Connecticut. Running the mixture into the pumping barrel from the supply platform

The Best Evergreen Trees for

WHY WE WASTE THOUSANDS OF DOLLARS A YEAR IN PLANTING THEM
WHICH HARDY CONIFERS COME—THE IMPORTANT KINDS FROM

By HENRI

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A DECLARATION OF INDEPENDENCE

For every European evergreen that is dear to the American people, another species of the same group can be mentioned that has the same style of beauty and is better adapted to our climate. In many cases, the two species will be so much alike that the ordinary person can hardly tell them apart. We declared our political independence of England long ago, and it is high time that we declare our horticultural independence of Europe. Until we recognize that the climates of Western Europe and Eastern North America are fundamentally unlike, we shall never make this country one great garden as England is, and meanwhile we

have squandered millions of dollars on European evergreens, roses, and other plants that feel orphaned when they get a thousand miles away from the Gulf stream. The trade and social affinities of the northeastern United States are with Europe, but our climatic affinities are with northern Japan, Korea, and China; with the eastern slope of the Rockies; and with Asia Minor. Those are the regions of hardy evergreens. The chief regions of half-hardy evergreens are Europe and California and the southern slope of the Himalayas.

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WRONG KINDS—THE SIX CHIEF OFFENDERS—THE REGIONS FROM H COUNTRY—WHEN AND HOW TO TRANSPLANT EVERGREENS HICKS

plant enjoys being wakened a dozen times during the course of a nap. But these interruptions are much harder on evergreens than on deciduous plants, because the former have an immense mass of foliage to support all winter. Just as soon as the sun comes out strong, the leaves start to "transpire," i. e., evaporate moisture (though less actively than in spring), and if the roots are frozen they cannot supply moisture fast enough to take the place of what the leaves give off. That is why evergreens so often look yellow and sickly in March. Wind often dries out soil or foliage faster than sunshine, and, broadly speaking, our winter winds are from the continent rather than the ocean, and, therefore, dry. The other great cause of mortality among evergreens is summer drought.

HOW TO MAKE THEM LIVE

The bother and expense of watering trees can usually be avoided, except, of course, at planting time. The soil generally has enough moisture; the only thing to do is to prevent its escape, and that is what a mulch is for. Put six inches of coarse litter around the base of every newly planted evergreen. This prevents unnecessary evaporation from the soil. Nature does the same thing. Go into any pine grove, and you will see the forest floor carpeted with needles. These dead leaves, which the evergreens have shed, prevent the moisture from rising out of the ground, save through the trees themselves.

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The common notion about planting evergreens without balls of earth is that the best time to set them is in April or May, when the soil is warm enough for the roots to begin action at once and before the new growth is long enough to wilt. The bulk of the planting is done then. A second season for planting evergreens is in August or September, so that the roots may become established before winter. But if an evergreen has a large ball of earth, full of feeding roots, and is carefully wrapped with burlap or something to protect the fine roots from the air, it can be moved any month in the year. This may or may not be more expensive, and the larger a tree, the more important it is that it be "root-pruned" before being taken up. To "root-prune" a tree ten to thirty feet high, draw a circle three to ten feet in diameter around it, dig out the earth to the width of two spades, cutting off and bending around the roots, cut partly under and cut the tap-root if the tree has one, fill the trench again, and leave the tree for a growing season, or until it has been accustomed to the new conditions and filled the ball of earth with fine new roots.

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In general, there are two types of roots among evergreens—the swamp type and the upland type. The arbor-vitæ is easy to transplant, because it grows where its roots have plenty of moisture, so that they do not travel far or deep, but make a compact ball of feeding-roots near the trunk. A pitchpine on a gravelly hilltop has to send its roots wide and deep to get moisture, and anything that makes a few large, thick roots is hard to transplant successfully. All the evergreens that the nurserymen sell in great quantities are fast-growing trees with the swamp type of roots, and Holland has the ideal moisture and labor conditions for growing young evergreens from seed and cuttings by the million. Unfortunately, many of these kinds are short-lived. For the most permanent features of an American landscape, we must look toward slower-growing species which generally have a deeper and wider-reaching root system. Every time I go to New York I see suburbanites buying Holland-grown evergreens of species that are sure to get ragged in a dozen years or die. They look so pretty in the auction rooms and by the ferries that it is impossible to resist them, and a man who never bought a tree before will buy an evergreen without knowing its name or caring. Lawson's cypress (*Chamaecyparis Lawsoniana*) must have been created to make all these people happy. It is a fast-growing, Pacific-coast species which the European nurserymen dote on. It has made over sixty varieties for them, including many variegated sorts, and is grown by the million in the Netherlands, where labor is cheap. These cypresses may last a few years on the suburban lawn, or a winter in tubs or hotel window-boxes, but they have not forgotten the land they came from. On the Pacific coast, the Japanese current warmed their ancestors; in Holland, they felt the influence of the Gulf Stream.

After a few experiences with a New England winter, they generally give up the ghost. It pays to know what you are buying.

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But life would be a poor thing if we never took a chance, and it would be a cruel and sordid thing to look at evergreens only from a utilitarian standpoint. Some conifers are so beautiful—the retinosporas, for instance—that we are bound to have them anyhow, whether they last five years or fifty; and some of us can stand it even if a tree does get somewhat ragged. The important and cheerful fact is that if a man has a good wind-break, he can grow to perfection almost anything within reason, and a good many things he could not reasonably expect. Perhaps the most beautiful and convincing proof of this that has ever been offered the American public is the case of the superb collection of evergreens at Dosoris, Long Island, which was begun by the late Charles A. Dana, editor of the *New York Sun*. In the February number of *Country Life in America* there are pictured seven famous trees of warmer climes, including the big tree of California and the cedar of Lebanon, which are growing at Dosoris behind a wind-break, without any other protection. To my mind, this is the strongest argument of all for having a windbreak, for a home that is merely comfortable is not much of a home, after all. We want beautiful homes, too.

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Cedar, red	<i>Juniperus Virginiana</i>
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Fir, Nordmann's	<i>Abies Nordmanniana</i>
Fir, short-bracted	<i>Abies homolepis</i>
Fir, Veitch's	<i>Abies Veitchii</i>
Fir, white	<i>Abies concolor</i>
Hemlock	<i>Tsuga Canadensis</i>
Juniper, American	<i>Juniperus communis</i> , var. <i>Canadensis</i>
Pine, Japanese garden	<i>Pinus parviflora</i>
Pine, Japanese umbrella	<i>Sciadopitys verticillata</i>
Pine, Korean	<i>Pinus Koraiensis</i>
Pine, lace-bark	<i>Pinus Bungeana</i>
Pine, Norway	<i>Pinus resinosa</i>
Pine, pitch	<i>Pinus rigida</i>
Pine, red	<i>Pinus resinosa</i>
Pine, small-flowered	<i>Pinus parviflora</i>
Pine, white	<i>Pinus Strobus</i>
Pine, white-bark	<i>Pinus Bungeana</i>
Spruce, Douglas	<i>Pseudotsuga taxifolia</i>
Spruce, Engelmann's	<i>Picea Engelmanni</i>
Spruce, Oriental	<i>Picea orientalis</i>
Spruce, red	<i>Picea rubra</i>
Spruce, white	<i>Picea alba</i>
Yew, Japanese	<i>Taxus cuspidata</i>

The Best Evergreen Trees for the Northern United States

WHY WE WASTE THOUSANDS OF DOLLARS A YEAR IN PLANTING THE WRONG KINDS—THE SIX CHIEF OFFENDERS—THE REGIONS FROM WHICH HARDY CONIFERS COME—THE IMPORTANT KINDS FROM EACH COUNTRY—WHEN AND HOW TO TRANSPLANT EVERGREENS

By HENRY HICKS

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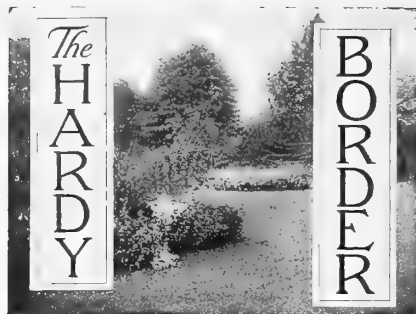
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Arbor-vite, Japanese	<i>Thuja Japonica</i> (T. Standishi)
Cedar, ground	<i>Juniperus communis</i> , var. <i>Canadensis</i>
Cedar, red	<i>Juniperus Virginiana</i>
Fir, Cilician	<i>Abies Cilicica</i>
Fir, Nordmann's	<i>Abies Nordmanniana</i>
Fir, short-bracted	<i>Abies brevifolia</i>
Fir, Veitch's	<i>Abies Veitchii</i>
Fir, white	<i>Abies concolor</i>
Hemlock	<i>Tsuga Canadensis</i>
Juniper, American	<i>Juniperus communis</i> , var. <i>Canadensis</i>
Pine, Japanese garden	<i>Pinus parviflora</i>
Pine, Japanese umbrella	<i>Sciadopitys verticillata</i>
Pine, Korean	<i>Pinus Koraiensis</i>
Pine, lace-bark	<i>Pinus Bungeana</i>
Pine, Norway	<i>Pinus resinosa</i>
Pine, pitch	<i>Pinus rigida</i>
Pine, red	<i>Pinus resinosa</i>
Pine, small-flowered	<i>Pinus parviflora</i>
Pine, white	<i>Pinus Strobus</i>
Spruce, Douglas	<i>Pinus Bungeana</i>
Spruce, Engelmann's	<i>Pseudotsuga taxifolia</i>
Spruce, Oriental	<i>Picea Engelmanni</i>
Spruce, red	<i>Picea orientalis</i>
Spruce, white	<i>Picea rubra</i>
Yew, Japanese	<i>Taxus cuspidata</i>



Why Hardy Plants Die in Winter, and How to Save Them

A CONTINUOUS blanket of snow that comes early and remains in its original state until the fickleness of spring is past is the ideal winter protection for so-called hardy perennials. Should a February's sun melt it into slush, and a subsequent cold spell convert the slush into ice, many plants, as well as the grass on low spots on the lawn, suffer. In some sections of Maine, Vermont and the Canadas the ideal protection generally exists, and the sweet William, Gaillardias, double-flowering sunflower, the cushion pink (*Armeria maritima*), and shallow-rooted plants like the cardinal flower (*Lobelia cardinalis*) come out of the winter in excellent condition, whereas in less favored situations, such as skirt the southwestern shores of Lake Michigan, they would perish unless artificially protected. Near Chicago the snow seldom remains over a month's time, and in some winters the opportunity for a single sleighride is a rare treat.

Toward spring is the critical time when the most damage is likely to occur from alternate freezing and thawing. If the effect of the sun's rays is excluded the danger is lessened. This applies not only to herbaceous perennials, but also to the wood of climbing roses and the flowering buds of Forsythias, *Prunus triloba*, and the rose-flowered Japanese weeping cherry. Some plants will perish in wet, heavy soils that would winter safely in the same climate if in light, well-drained soil.

In our hard borders we have plants from all corners of the earth, many coming from sections where conditions of soil and climate are at variance with those of their new home. Examples of such plants requiring special treatment are the rare and beautiful *Stokesia cyanea*, from the sandy pine woods of Georgia which, while hardy as far north as Boston in congenial situations, is not so with me in our clay loam, unless moisture in winter is kept away from the roots. I carry it safely by placing a hotbed frame over the group, filling it with dry oak leaves and covering with a sash or broad shutter. The cardinal flower (*Lobelia cardinalis*) is treated in the same way. While this plant is native, and winters safely in the damp, but heavily grassed, prairie, where the network of roots of the surrounding grasses holds down those of the cardinal flower, it is very likely to be lifted out of the soil in an open bed. In-

verted sods laid over them often bring them through safely.

An open, wet winter often kills the Gaillardia—a native of Texas—but by planting in a well-drained soil, covering with strawy manure or dry leaves, and placing over them a waterproof wooden shutter, so slanted as to shed water from the bed, I bring them through in good condition. Often when the crowns appear injured they will break out from the roots and form new plants. It pays to have patience with plants of doubtful hardiness, instead of discarding them if they look weak or ragged. Have a reserve garden for such things and for every plant until you have lived with it a year and know its color, season, and good and bad points. Then you can place it where it will appear to the best advantage.

Don't be in a hurry to cover. A good frost, or even a hard freeze, will not injure them. Let your neighbor cover first, so the field mice, seeking cozy winter quarters, may nest in his coverings, and nibble at his bulbous plants instead of yours. The last of November or even later is early enough.

In the meantime, if possible, gather up the fallen leaves in the woods, preferably oak, and store them under cover. Cut down the eulalias, and eventually use them in place of straw in protecting climbing roses and tender shrubs, or even spreading them over the strawberries. Save them in the spring and store them for another season. It pays to grow some in the kitchen-garden for covering purposes alone, and it is cheaper than buying straw.

If you grow the pennisetum as a border to a canna bed or for decorative purposes, pull them up, roots and all, and use them over any group of early-blooming bulbs. They afford good protection, and leave the bed free from litter when removed.

Cut to within a foot of the ground the vines of *Clematis paniculata* or any of the small-flowered forms of clematis to use in protecting climbing roses, laid-down grape-vines and raspberry canes, or to place over a bed of any perennial possessing an evergreen foliage like the perennial poppy.

Cut close to the base all perennials that naturally die back, saving the stiff woody tops, such as the asters, for use over evergreen foliage. Spread short half-rotted manure all over the bed, working it well up to the necks of those retaining their foliage.

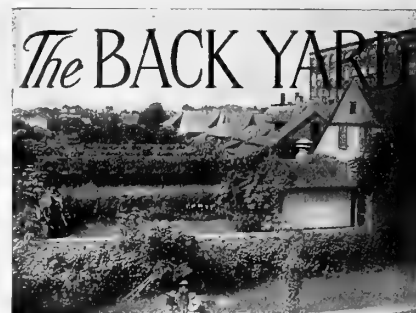
Cut, in September, or before the foliage matures, so it will be retained all winter, short boughs of oaks or evergreens, and insert the butts between plants of moss-pink (*Phlox subulata*), hardy pinks, or any low-growing evergreen plant. This keeps the sun off, catches the drifting leaves, and affords a light, well-ventilated protection.

Cover early-blooming bulb-beds with eulalias, pennisetum, long straw or hay—or strawy manure with the droppings shaken out. The ground being frozen all winter and up to the time of removal, no manurial leaching may be expected, and this covering comes off with but little litter to remove from among the peeping, brittle points of growth.

For narrow borders of any low-growing evergreen plants or for the fall-produced tips of the Spanish iris, and even for newly planted rows of strawberries, inverted V-shaped troughs placed over them is ample protection.

When spring comes, remove the rougher material and fork in the finer, but in large beds of phlox or any thick-foliage plant, push back out of sight, instead of forking in. It will act as a mulch and help retain the moisture.

If you failed to mulch your border and strawberry bed, do so now. February is a month of alternate freezing and thawing. Highland Park, Ill. W. C. EGAN.

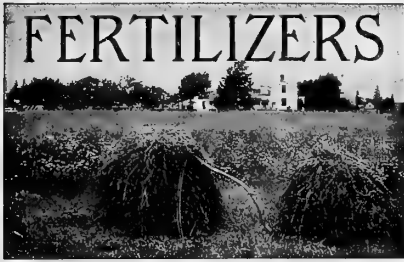


The Problem of the Wooden Fence

A HIGH board fence is an eyesore, yet many people are unwilling to cover it with vines, because sooner or later these will cause the wood to decay. The thing to do is to put up chicken wire in front of the fence and grow the vines on the wire.

We bought some strips a few years ago, an inch thick, two or three inches wide, and thirteen feet long, for five cents each; also some two-inch mesh wire netting one or two feet wide at three-quarters of a cent a square foot. Nail the strips to the fence perpendicularly, about six feet apart. To these tack the wire horizontally, leaving six-inch intervals between the widths of wire. The space between the fence and the wire provided by the strips is to allow for the twining of the vines and to give a little air space around the leaves. The intervals between the widths of wire are partly for economy, as the vines will reach from one to the other, making a solid mass of wire unnecessary, and partly for convenience in handling and training, which is difficult to do on an unbroken stretch of wire.

Foliage vines, except English ivy, are good for this purpose. Virginia creeper and ampelopsis are two of the best of these. Vines with abundant foliage make a good background for cosmos, hollyhocks, single dahlias, and other flowers that require support. These can be tied to the wire as they grow, or else flowering annual vines can be planted each year—cypress vine, morning-glory, climbing nasturtiums, or sweet peas for beauty. For use and as a curiosity plant some mixed gourd seeds. Ten cents' worth will provide as many dollars' worth of surprise and entertainment. H. B.



How to Buy Fertilizers

THE simplest and easiest way for any one to solve the fertilizer problem from the gardening point of view is to buy a bag of ready-mixed fertilizers, and thousands of people do this every year. It is not, however, the intelligent nor the economical way. Economy, however, does not cut as much of a figure in the small home garden as in farm operations or in professional fruit and vegetable gardening. We spend more than fifty million dollars a year on fertilizers, but at a rough guess it is doubtful whether the fertilizers bought for home and garden use would amount to more than a million or two.

If I had only five dollars to spend on my garden this year, I think I should put four of it into fertilizers and one into seeds and plants. The reason why the general run of gardens in this country have only ordinary success is that a person commonly thinks first of the plants that he wants to eat, while the needs of the soil come afterward. Year after year I make the same old mistake of buying a great variety of seeds, most of which are forgotten in the spring rush, or if I get the rare things planted the chances are that they never survive, or drag out a miserable existence. Every single plant in a garden ought to be a success, and the only way to have a successful garden is to have the soil rich. There is a great deal more satisfaction in having a few sturdy plants that are simply bursting with health and vigor than half-starved specimens of rarities and novelties. Any one who reads this magazine ought not to be satisfied with a garden that is simply "good enough." It ought to be a very good garden, and the only way to have a very good garden is to enrich the soil by fertilizers or manures.

While the people will go on buying ready-made fertilizers till the crack of doom, the man who enjoys putting intelligence into his hobbies will find the fertilizer problem a fascinating one. No subject under heaven is more complicated or has more uncertain factors. But these obstacles only add zest to one's enjoyment if one goes at the matter in the right spirit. When Liebig, about 1841, discovered the nine elements of plant food, people jumped to the conclusion that the only thing we should have to do would be to analyze the plant and find out its chemical constitution. This has been done a million times, but the chemical constituents of a plant will never be an absolutely safe guide as to its needs, for a plant often takes up more of a given element than is good for it. The next great hope of humanity that

was dashed was the assumption that a chemical analysis of the soil would give an infallible guide for determining what kind of fertilizer to use and how much. The reasons why soil analysis alone can never be a perfect guide are numerous. Neither method alone is entirely reliable, but both, when taken together, furnish valuable hints.

While there are nine elements of plant food, and perhaps more, there are only three of them that are of practical importance to the planter. These are nitrogen, phosphoric acid and potash. These are the elements that are usually deficient whenever crops fail, and they are the costly elements to replace. To these should be added lime, which is also a plant food, but which, so far as its food value is concerned, is nearly always present in sufficient quantities. The great function of lime is to make the soil comfortable for the bacteria that supply nitrogen to the soil. Lime sweetens sour land, and often improves the condition of the soil that is not sour. It is therefore called an "amendment" rather than a food.

The only intelligent way to buy fertilizers is to find out what nitrogen, phosphoric acid, potash and lime are for, what forms they can be purchased in, and the relative value of these for general and special purposes. It is commonly said that nitrogen makes growth, phosphoric acid flowers, and potash fruit. This is going a little too far, because phosphoric acid and potash work together for the formation of flowers and fruit, and the experiment station people are not willing to say that their functions are differentiated in the manner stated above. But there is no question what leafy crops need. All such crops as lettuce and cabbage, of which we eat the leafy parts and not the flowers or seeds, require plenty of nitrogen.

This department will discuss how to buy nitrogen; how to buy phosphoric acid; how to buy potash; lime, when and how to use it; what special crops need; what different kinds of soil need; low-grade versus high-grade fertilizers; barnyard manure; cover crops; and in general the whole subject of making the garden rich and productive. The aim will be to simplify the whole subject as much as possible, and the point of view will be entirely that of the home, fruit, vegetable and flower garden. In my library there must be five or six hundred bulletins on fertilizers, but of course they deal almost entirely with the problems of the professional farmer and horticulturist, and the scale of operations is large. Hidden away in this discouraging mass there are a few pamphlets that will be of genuine help to the gardener. It will pay every one who has a garden to ask the United States Department of Agriculture for printed matter on this subject, and also to write to his State experiment station, specifying exactly what he wants. There is no time like the winter to study the fertilizer question, nor is there any other subject which we can so profitably study. The way to have a better garden next year is to enrich the soil as much as possible.

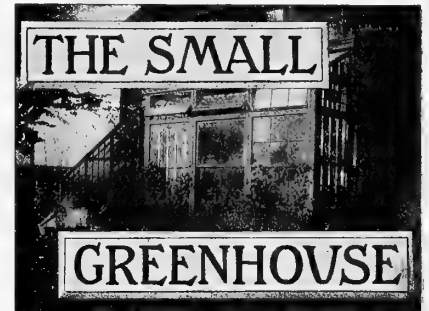
Articles in this department will be written by unbiased specialists. The fertilizer bus-

iness is on about the same intellectual and moral plane as patent medicines. This department is in full sympathy with the experiment stations.

PRACTICAL HINTS FOR FEBRUARY

See what you can do about getting manure for the garden. The value of manure depends almost entirely upon the way it is handled. If you have plenty of barnyard manure, haul it out every day to the garden if it is practicable, and put it on the snow. The worst thing you can possibly do is to leave it exposed to the rain and never turn it over, because it heats quickly and most of the nitrogen goes away. Whenever you smell ammonia, nitrogen is being wasted. Keep the manure under cover and fork it over every three or four days, or else haul it out every day and put it where you want it to do the most good. Now is the time to manure the lawn or sprinkle bonemeal on the snow.

WILHELM MILLER.



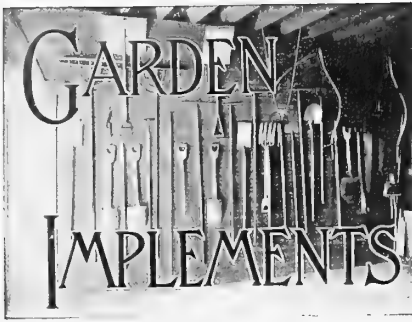
Greenhouses Costing \$100 to \$350

THE little greenhouse pictured in the department heading is the property of Mr. E. T. Harvey, of Bond Hill, Ohio. Although Mr. Harvey goes to Cincinnati daily, he manages to care for his greenhouse in a half-hour each morning. The house is 34 feet long and varies in width from 8 to 12 feet. Such a greenhouse can be built for \$350. The owner adds still further to its usefulness by using it as a back-ground, around which he has laid out a flower border 2½ feet wide. In the spring this border is filled with Dutch bulbs, and in the summer with greenhouse plants.

A remarkable feature of this small greenhouse is the number of large plants it contains, such as large palms, a *Pittosporum Tobira* measuring more than 5 feet across, loquat, orange and lemon trees bearing fruit, araucarias, azaleas, camellias.

These are moved into the open garden in the summer-time. Three large climbers stay in the house all the year round, a night-blooming cereus, some climbing roses, and a *Monstera deliciosa*.

A greenhouse costing \$100 has been built by a resident of Ottawa for use in an entirely different way. His object was simply to raise flowers and vegetables for setting out in his garden, and to protect a few flowering plants in the fall and spring. It is a "lean-to" 15 feet wide and 20 feet long.



Gardening Without Backache

THE wheel-hoe is the most important garden tool invented within a century; at least, one gardener thinks so—a busy housekeeper, who has undertaken the entire care of the garden as a means of health and pleasure. What can it do? Almost everything that hands, hoes and rakes can accomplish, and does it better and faster. My wheel-hoe has one small wheel and four kinds of attachments—rakes, scrapers, cultivators, and plow. There are more elaborate ones with drill attachments and large wheels—some with two wheels. They cost from \$2.25 to \$10. This may sound like a high price, but ours has long since paid for itself several times over, because it is such a saver of time and strength, and does its work so well.

The small-wheel kinds are best adapted for soil that is in fairly good condition, but the large wheel is better for rough land, because it rides over obstructions more easily.

The wheels make it possible to push the tool in a series of jerks—drawing it back every few feet for a fresh start; this will not be found necessary in light, loose soil, or for shallow cultivation.

The most expensive attachment is the drill, and this is invaluable to the market-gardener and to the country gentleman, or to any one who has a large garden, especially if the rows are long and only one kind of plant is grown in a row. In the small home garden, however, where many kinds are grown, and in short rows, the expense of a drill may be saved.

The scrapers are excellent for nipping off a fresh crop of young weeds, keeping the paths clean, or for shallow cultivation, but in our experience the plow has been the most useful of all the attachments, though we have nothing against the others; they are useful and satisfactory, but the plow prepares the trenches for all but the shallow-planted seed, covers the seed after it is planted, does all the close cultivating and a good part of the general cultivating between rows, and last, but not least, it is in constant use as an edger for the beds and vegetable rows; more than one washout has been prevented in our garden by keeping the crops ridged up by the indispensable wheel-hoe.

My ancient and orthodox hoes stand rusting in a corner of the barn. Even the push-hoe, once a prime favorite, and the ever-useful

rake, are taking a rest, for the wheel-hoe replaces them all, and, besides that, does work which they never pretended or attempted to do. My memory is still sore with thoughts of the bone-racking motion of the primeval hoe and the see-saw of the old-time rake.

Think of the difference between that and taking a stroll between your rows of vegetables, pushing that light-built, easy-running gem of a tool—the wheel-hoe! The only time mine has been really hard to work was when I tried to plow too deep, or run it up-hill or turn tough soil; although this work was hard to do, it would have been impossible with any other hand-tool.

IDA M. ANGELL.



Flowering Trees and Shrubs

EIGHT SHOWY KINDS THAT CAN BE TRANSPLANTED FROM THE WILD IN FEBRUARY

FEBRUARY is an excellent month for transplanting flowering trees and shrubs from the wild into home grounds, especially if the January thaw has bared the ground and the air thrills with the promise of spring. The trees are dormant, their roots packed tight in frozen earth. It is harder digging, but you get a better ball of roots.

Certain flowering trees among our native species are as beautiful as any exotics obtainable from a nurseryman. In fact, all the best ones are sold by nurserymen. Where these trees are common there can be no objection to digging them up to take home. And these trees are always dearer to the family than trees purchased from a full purse by proxy.

I suggest eight native trees for transplanting to the home grounds this month. Go to the woods and locate a full-grown tree. Bark, shape, hanging seeds, leaves on the ground, or the situation of a tree may enable you to recognize it in winter. The winter bud is the best means of identification. Next best is the arrangement of buds, whether opposite or alternate. A twig from the old tree will enable you to find saplings of the same species. The buds are exactly alike. First comes the problem of selection. The younger a tree is the safer is its transplanting. Choose shapely young specimens that grow in open spaces. Their roots are not entangled with those of older trees. They have had sun and air. Their buds are large. They will make a quick, vigorous start, for their twigs are stored with food. Their bark is thicker; they are harder than saplings in crowded places. Tap-rooted trees are hard to dig and hard to move. Fibrous-rooted ones are easier, for

they are shallower and have a close grip on the soil. Trees growing in clay loam are more successfully transplanted than those in sandy soil, for clay sticks and sand falls away. The second problem is to dig a sapling so as to save the highest percentage of its fibrous roots and to keep these from exposure to the air. In February, careful digging will usually turn out a solid ball of earth. This may be wrapped in a gunnysack to hold it together on the home trip.

The last problem is to set out the tree in the hole previously dug to receive it. It should be solidly packed with soil all around and under the ball of earth. It should have its old level—no lower, no higher. The top must be pruned to offset the loss of roots. No watering is necessary.

In short, the philosophy of successful transplanting of deciduous trees is that the small feeding roots should be kept in ignorance of the change that is going on.

Every garden needs a flowering dogwood, with its snow of white blossoms in spring. It should be planted in the border of an open lawn, but overtopped behind by large trees, because it has no foliage of its own at flowering time to make a background for the blossoms. The price of such a beautiful tree is careful transplanting and patience with its slow growth.

The tulip tree is another particular tree. Its roots are fleshy and easily injured. To get a young sapling home without bruising the roots and unduly jarring the earth ball requires patience and intelligence.

The hobble-bush, or wayfaring tree of America, bears white blossoms in spring in a flat cluster, the outer flowers of which are large and showy, like the snowball's. The shrubby viburnum loops down its slender stems and strikes root at the joints. One of these offsets will grow well and brighten with its scarlet berries a moist and shaded corner of the garden.

The pink-flowered crab-apple is beautiful in bloom, and its fragrance is spicy and delicate. The native hawthorns should have at least one representative in every garden for its white blossoms, abundant showy fruit, and picturesque, angular, and thorn-set branches. The shad-bush, or Juneberry, will as readily light up your yard with its cloud of early white bloom as it does the awakening roadside. The crab-apples, hawthorns, and Juneberries may be successfully transplanted from the wild into ordinary garden loam without taking extra care.

The tree "pussy" grows on a bog willow (*Salix discolor*). Cut twigs this month and keep them in water. By the time you are ready to discard them as bouquets the twigs will be well rooted, and by setting them in moist soil you will soon have pussy willow trees.

The witch-hazel is the last in the yearly procession of flowering trees. It blooms in October and ripens its last-year's seeds at the same time. The yellow flowers are delicately fragrant, and, though small, make a fair show because of their abundance. The explosive pods furnish much amusement.

JULIA E. ROGERS.



The Famous Georgia Collards

THE collard is the best hot-climate plant of the cabbage family for greens. This is a good thing to know, for the cabbage is essentially a cold-climate vegetable, and few of its forms will do their best in hot weather. The collard does this at the expense of forming a compact, self-blanching "head." Instead of having a broad, well-rounded leaf, like a cabbage, it has a narrow, deeply lobed leaf, and these leaves are arranged in a characteristic rosette. The tender young leaves below the top are cut off and eaten, and the plant grows up to a height of two or three feet, forming new rosettes above while being robbed of its leaves below. Collards are to the South what kale is to the North.

There are two varieties—the European and the Georgian. The European is called rosette colewort, green rosette colewort, or simply collard, and, although capable of forming a head, it is generally cut for greens. Unlike the Georgia collard, it grows only eight or ten inches high. The leaves are crimped, rounded, and deeply hollowed or spoon-shaped. If sown in early spring the crop is ready in August, and if left later the plants make heads, but there is not much point in doing this, as cabbages make better heads. Consequently, the thing to do in Europe is to sow the seeds in early summer, in order to have greens in late autumn, when greens are scarce.

It would be interesting to know when and where the Georgia collard originated, who developed it, and how. As far south as the orange belt it is customary to sow seeds in February or March, so that the crop will be

ready before drought sets in. In the middle South, where collards are most popular, they are often started in July or August for autumn greens. When the young plants are transplanted to their final positions they should stand about three feet apart, in rows three and a half to four feet distant. The cultivation is the same as for cabbage.

Professor Bailey says that young cabbage plants are sometimes eaten as greens under the name of collards, and that cabbage seeds are sown for this specific purpose.

It is not likely that collards will become popular in the North, as kale is common and cheap and better adapted to a cold climate.

H. R. C.

The Cultivation of Collards

THE collard, to the rank and file of Georgia Crackers, is what the potato is to the Irishman, and a dish of collard greens is a *sine qua non* of the dinner of the farm laborer, black or white. The collard is an accommodating vegetable, and will grow and thrive under conditions which would cause any self-respecting cabbage to hang its head and wither of disgust. In the gardens it is planted in the early spring, and in a little while the first greens may be had by thinning in the rows. Then begins the process known as "cropping"—i. e., the gathering of the under leaves, and from then on indefinitely "cropped greens" are a daily food. The more the collard is cropped the taller grows its stem, and it is nothing unusual to see straggling rows of stems some four feet high, crowned at the top with a rosette of dark-green leaves, and with brave little sprouts putting out up its entire length where the leaves have been taken off for cooking. They live all through the summer, grow delightfully tender and juicy under Jack Frost's attentions, and then in February go to seed along with those which have been sown in the fall for the special purpose of making seed for sale to the dealers.

As a side crop collard seed is profitable, though, of course, the market for the output is limited. The preparation of the soil for collards does not conflict with any other plantation work. The five-acre field which the picture shows in bloom was sown in oats in February of 1903 and made a good crop

which was cut in May. The ground was then broken, broadcasted, and sown thickly in peas in three-foot drills. The pea-vines were cut about the middle of September and gave a fine yield of hay. The field was then broadcasted again, laid off in four-foot rows, heavily fertilized, and then set with the collard plants which had been grown from seed planted in a garden spot some six weeks before, the time from the cutting of the pea-vines to the transplanting of the collards being only about six weeks. Their cultivations consisted of two plowings at intervals through the fall and winter, and the seed will be ready for gathering by the latter part of May, when cotton will then be planted after them, thus making four crops in less than two years on one plot of land.

The first Georgia-grown collard seed, some thirty years ago, sold to northern dealers for fifty cents a pound. This, when from two to five hundred pounds were gathered from an acre of ground, was a brilliant investment from that astute man—a transplanted Yankee—who inaugurated the industry. There are a great many now who grow the seed, and the price ranges about twenty cents, but there is a good profit even in that.

Cairo, Ga.

MRS. HENRY WIGHT.

The Southern Gardener's Reminder

PLANT raspberries, strawberries, blackberries, pears, and apples

Plant sweet peas—the earlier they can start the better they will be.

Vegetables which may be planted in the latitude of Richmond. Sow in hotbeds: cabbage, cauliflower, beets, lettuce, onions, radishes, egg-plant, peppers, and tomatoes.

In open ground, last of month, beets, carrots, celery, kale, parsley, radishes, onion sets, horse-radishes, and hardy lettuce plants.

Latitude of Atlanta. Sow in hotbeds: egg-plants and peppers.

In coldframes: cabbage, broccoli, cauliflower, endive, Kohlrabi, lettuce, celery, parsley, and cress.

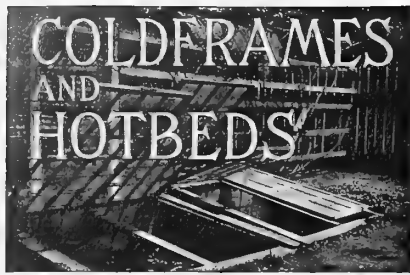
Outdoors: early potatoes, early English peas, carrots, beets, leeks, mustard, early radishes, and turnips. Set out cabbage plants started in November.



45. A mammy "crappin' greens." Collards in flower



46. Gathering collard seeds



What Coldframes Are Good For and How to Make Them

EVERY well-regulated family ought to have at least one coldframe and one hotbed. A coldframe differs from a hotbed in having no fermenting manure to supply heat, and in being used chiefly for protecting, over the winter, plants that could not live outdoors, such as tea-roses, while a hotbed is used chiefly to get fresh vegetables a month or more earlier in the spring. Both are cheaper than greenhouses, and both have other uses than those mentioned above.

For instance, coldframes can be used to lengthen the season of fresh vegetables both in fall and spring, though, as a general thing, they cannot be expected to yield a sufficient variety and quantity all winter as hotbeds can, because the temperature in a coldframe during the winter is too low to encourage growth. However, it is quite possible to have fresh spinach from coldframes all winter if it is started early enough to be in its prime by November. So grown, it attains a quality superior to any grown outdoors. Lettuce and radishes also can be had from coldframes throughout the winter, though, naturally, the product is better and more abundant in the months that have more hours of sunshine than December and January. The coldframe also fulfils the same function as the hotbed in starting vegetables in early spring that are to be transplanted to the open ground as soon as the danger of frost is past, though a coldframe will ordinarily enable one to get fresh vegetables in this way only a fortnight earlier, while a hotbed would gain a full month. Moreover, coldframes furnish the best way of growing violets, pansies, English daisies, and the polyanthus primrose, all of which would usually survive the northern winters out of doors and bloom in May. In coldframes, they will bloom for a month or more any time from February to April. Again, foxgloves and larkspurs, though quite hardy and easy to grow from seed sown outdoors in spring, produce far better results if started in September, kept over winter in coldframes, and planted outdoors in spring. There are a great many choice plants that are not quite hardy and do not need to grow at all during winter, but do require some light or they will become weak and spindling. The coldframe is better for storing such plants than the cellar. When a coldframe is made deep enough to store rhododendrons, azaleas, star jessamines, and other plants, three or four feet high, it is called a pit.

A coldframe may cost anywhere from nothing to fifteen dollars. If one does not care about looks, a loosely thrown together framework, such as is used in the field and removed, leaving the plants to mature where they started, will be found useful for some things, but the best thing is to have a permanent structure which is stoned, bricked, and painted. One that will answer every purpose is nothing more than a topless and bottomless box with a slope of a few inches to the front, which must face the south or southeast. Set it where there will be a fence or building to protect from north winds. Fit the top with a sash which can be lifted for airing and watering; see that the soil is rich and mellow enough for a garden bed; bank up the outside, and you will be ready to sow the seeds of joy for yourself and of envy for your neighbors.

If you do not wish to attempt anything more elaborate than the starting of a few vegetables and flowers in the spring for extra early bearing, you need not bother with the sash, but in its place use a piece of cloth—any material that will keep out cold—fastened to a framework made of inch-thick strips of common pine.

Strictly speaking, a coldframe is a structure accommodating four sashes each 3 x 6 feet, the cost being about \$15. They can be bought ready-made and shipped any distance.

If your frame is to be used simply for wintering dormant plants, start your seeds in the summer or fall, long enough ahead for the plants to become fair sized before transplanting to the frame. In the latitude of New York, the middle of September is early enough for cabbage and lettuce, as any earlier sowing tends to make them go to seed. By about November 1st, your seedlings should be ready for the frame, but do not cover them with sashes until there is danger of freezing, and even then the sashes need not be used in the daytime if there is bright sunshine. In fact, the raising of the sash two or three inches for ventilation during the day keeps the plants from becoming too tender. As the weather becomes colder—10° or less above zero—the glass must be covered at night with carpet, boards, straw, or other protective material. If the plants have become frozen in the frames, this extra protection may be left day and night in case of two or three days of severe cold. You may apply the same principle to the removal of snow—if the plants are not frozen. When snow falls, it must be cleared off, for if left a number of days the plants will become tender.

If the temperature inside the frame is from 25° to 32°, the plants will remain dormant. Transplant to open ground when spring is settled.

But, if you prefer to use your frame for starting extra early spring-sown plants, to gain two weeks in the outdoor season, plant your seed four weeks ahead of outdoor planting. Radishes, parsley, beets, and similar vegetables must be planted about March 1st in the neighborhood of New York, and set in the open ground about April 15th or May 1st. A 3 x 6 sash will accommodate about 400 lettuce plants, which should stand about two

by three inches apart until transplanted outdoors.

If you have to be very economical, build some extra frames without sashes and fill them during the winter with leaves or straw to keep the ground unfrozen. On March 1st, set in some of the lettuce plants—fifty to a sash. Transfer the glass from any frame which no longer needs it. Allow the plants air and rain in generous quantities and you will have lettuce two weeks ahead of the outdoor season. When your lettuce comes out in May, plant a half-dozen cucumber seeds in each sash. Keep the glass on at night until the middle of June, when the finished article will be ready to reflect credit on your table.

Don't forget to provide yourself with small shallow boxes for all seedlings; you will find them more convenient and easier to handle than if raised directly in the frame.

When properly treated, plants which are wintered in coldframes will become so hardened that they will stand setting out in the spring long before the seedlings from spring-sown seed. Cabbage, cauliflower, and lettuce are almost hardy anyhow, and several degrees of frost do not hurt them.

For these vegetables, coldframes are much less trouble than hotbeds, and very little later if closed at night and covered with mats.

IDA M. ANGELL.



A New Reason Why Roses Should Be Ordered Early

TEN years ago everybody used to order roses in May; now, to get the best stock, they send in their orders in February or even as early as January, stating the date they wish to have them delivered. An immense new business has started up in the last few years, called the "advance order" or "reserve order" business. The up-to-date nurseryman now has an "advance-order house" in which he places the plants for future delivery as soon as they are ordered. Each lot has attached to it a conspicuous card, stating whom the plants are for and when they are to go. This is a vast improvement on the old-fashioned method of ordering at the last minute, and as a result receiving the tag ends of the stock, or, worse yet, getting an inferior or different variety because the supply has run out.

The March number of *Country Life in America* will contain an elaborate ten-page article on "How to Grow Roses."



We design, erect, heat, and ventilate Greenhouses, Conservatories, Palmhouses, and also manufacture HOTBED SASH and Frames. Send four cents postage each for our beautifully illustrated catalogues.

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Horticultural Architects and Builders

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Like plants?
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We are **HEADQUARTERS** for Palms,
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of all sorts, Vines, both hardy and tender, Aquatics, Conifers, Tropical and Hardy Fruit trees, Economic plants and trees, Bamboos and Grasses, Flowering plants and Shrubs, Trees, etc., in the greatest variety in America. Send for our large interesting catalogue, nicely illustrated; with prices very moderate; no agents. We have thousands of satisfied customers in America, from Oregon to Maine; Mexico to Canada; Minnesota to Florida, and many in the tropics around the World from Philippines to the West Indies. We ship everywhere every week in the year **SAFELY!** Large plants by mail; better by express or freight at lowest rates. Make a note of our address and ask for a catalogue and testimonials.

REASONER BROS., Oneco, Florida

P. S.—Our stock, naturally grown here in sandy soil is far better rooted, and more vigorous than hot-house plants, for **ANY** and **ALL** climates.

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KENTUCKY Blue Grass SEED

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Makes the most beautiful lawns and desirable pastures. Our "Lexington" brand is from fancy selected crops, fully matured, grown on the best blue grass lands, carefully cured and cleaned by most modern processes. Each bag fully tested.

Enough to sow 20x30 feet, postpaid . . . \$0.40
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 Enough to sow 40x50 feet, express paid . . . 1.75

Special Prices on Larger Quantities
 Flower and Garden Seeds Catalog—FREE
 DAVID C. FROST (Est. 1884), 224 W. Short Street, Lexington, Ky.



Cheap Spraying Outfits for Home Gardens

IT is impossible to have first-class vegetables and fruit without spraying. Most people are afraid of the subject, because they think they must learn all about the insects and a lot of hard Latin names.

The main things to know are these: (1) the chief enemies; (2) whether they are chewing or sucking insects; (3) when they are most defenseless. With the exception of those species that feed below the ground or are concealed in the plant tissues, insects are nearly all fairly easy to attack. They belong to two general classes: (1) those that suck the juices through their tubelike beaks, which are generally held close to the lower side of the abdomen, and (2) those that bite off little pieces with movable jaws. Squash bugs and plant lice are examples of the former; grasshoppers and caterpillars, of the latter.

For the former, entomologists recommend solutions, dusts, oils, etc., which suffocate these creatures by stopping up their breathing-holes (which are always in the sides of an insect, not on the head); for the latter, Paris green or other poisons, which are taken into the stomach. Tons of Paris green are wasted every year on sucking insects.

The majority of plant diseases either conceal their vegetative parts beneath the tissues of the plant they grow upon, as black knot of the apples; or, like the powdery mildew of the gooseberry, spread these parts mainly upon the outside of the plant tissues which they enter only by means of suckers (hantoria). A hand lens will show which is which. In general there is no remedy for the former after they once gain entrance, though sprays are recommended as preventives; the latter are usually combatted with sprays and powders.

Four dollars will buy an excellent pump and hose suitable for home use. This outfit consists of a portable, double-acting force pump, attached to a hand bucket, with hose and nozzle for spraying.

If you need a larger apparatus, nothing is more satisfactory than the barrel form, which costs about ten dollars complete, with ten feet of hose and a nozzle.

Unquestionably these are two of the very best spraying outfits made; and with different nozzles, which cost only a trifle, you can use them for every domestic purpose, such as washing windows and wagons, for white-washing, and even for painting. M. G. K.



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We are headquarters for lilies which we import direct from Japan and Bermuda and grow extensively at all seasons. They are the finest obtainable. We also grow

Japanese Dwarfed Plants Wisterias, Azaleas and Plants suitable for Japanese Gardens

Your garden will not be complete without some of the above. Let us tell you about Japanese Gardens. Our Japanese landscape expert will be glad to give you the requisite information for making one of these unique gardens. Sketches and estimates furnished.

HINODE FLORIST CO., WHITESTONE, LONG ISLAND, N. Y.
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BEAUTIFYING YOUR GROUNDS

It would be difficult to conceive a plant that would add more to the beauty of your grounds than the everblooming

"BABY RAMBLER"

It has been planted in all parts of the country, and has never failed to develop into a hardy and sturdy plant. It grows from 24 to 30 inches in height and blooms continuously from early June to severe frost; think of roses every day from June to November. As many as 120 individual flowers have been counted on a single panicle. The foliage is of a fine polished dark green. Every plant we ship is exceedingly sturdy and is guaranteed to be healthy and perfect in every respect. Our landscape department is complete in its various departments. Can it be of service to you? Our beautiful catalogue illustrating ornamental trees, vines, shrubs, flowering and fruit-bearing plants is sent free on application.

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- Japan Maple
- Concolor Fir
- Blue Spruce, Koster Variety
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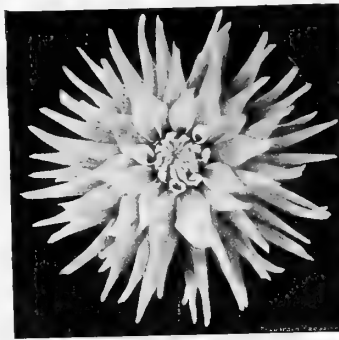
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We also make and erect—on one contract—all kinds of Iron and Wire Railings, Fences and Gates, for Lawns, Gardens and Farms. Original Designs and Estimates free. If you really want the highest possible quality, write for Catalog No. 30 A. Anchor Post Iron Works, 15 Cortlandt St., N. Y.



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We have one of the most complete lists of the choicest and latest varieties in this country

NO other flower enjoys more popularity at present than the Dahlia and no garden can be complete without a choice collection.

Our catalogue for 1906 of "Arlington Tested Seeds" gives a complete list also of Flower and Vegetable seeds. It is our aim to look first for quality; our strains of Flower and Vegetable seeds show

this care; our catalogue contains an exceptionally large list. It has been compiled with the greatest care as to descriptions and illustrations of a complete collection of Flower and Vegetable seeds, Plants and Shrubs.

We want you to receive this catalogue; write us and we will send it.

W. W. RAWSON & CO.

SEEDSMEN

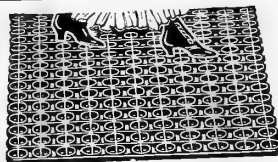
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LIVE-FOREVER PINK ROSE AS A HEDGE. 10 to 20 cts. EACH PLANT

This hardy and beautiful rose blooms abundantly every year, 500 roses on one bush, and succeeds everywhere. It is especially desirable for bedding, rose hedge or as a climbing rose. No garden is complete without this rose which endures more neglect than any other, and is less troubled by insects. Buy direct from grower and save 50% of Live-forever Rose; 2 year bushes, 20c. each, 12 for \$2.00, 50 for \$7.50. Price of a year bushes by mail post-paid for hedges, 10c. each, 12 for \$1.00, 50 for \$3.00. All of the best hardy varieties of fruit trees, small fruit plants and vines true to name. Green's New Illustrated Catalog, also a copy of Green's Big Fruit Grower Magazine Free. Send postal card for them to Address, GREEN'S NURSERY CO., 418 Wall St., Rochester, N. Y.

The Glen Steel Folding Mat



Prevents Anyone Tracking Mud or Snow Into the House. One scrape of the foot in any direction across a Glen Steel Mat takes off all those balls of mud and snow which cling so tenaciously and resist all the ordinary mats. The Glen Mat is neat, attractive, is easily cleaned, does not curl up. Its wonderful construction and flexibility will wear a lifetime. Unexcelled for residences and entrances to all public and private buildings. First class dealers handle the Glen, if yours don't, write today for catalog and particulars. We bar and soda-fountain mats on same principle.

Glen Mfg. Co., 149 Mill St., Ellwood City, Pa.

Also Mfrs. Hartman Steel Picket Fence, Hartman Flexible Wire Mats and Hartman Stockade Wire Fence.

TRUE—AMERICAN BEAUTY ROSES—NEW

Last year on our immense Rose Farm there were discovered so many new varieties that so far outclassed the ones that we have devoted our entire attention to putting these on the market and have disposed of all other varieties. Chief among these there were four which have caused wonder and amazement among the judges at the latest flower shows. They have been termed the Pink, White, Striped and improved Red American Beauties, because in every way, excepting color, they exactly resemble that World-famed American Beauty Rose, but to the delight of Rose growers have proven to be the most profuse bloomers of any rose yet introduced, and are so hardy will live outdoors the year round in the coldest climates. We are positively the only place where these wonders can be purchased. We discovered them, we named them, and we are introducing them for the first time. We have grown a large quantity of these roses in both sizes, and offer them to you at an extremely low price—less than cost of single bud at the cut flower stores. We will send this collection of roses in two sizes, both strong and well matured plants, all charges prepaid, and guaranteed to arrive in good growing condition. Postage stamps not acceptable.

Price for 1-year-olds, the Red (improved), Pink, White and Striped, 25c. each, the 4 for \$1.00. 2-year-olds, 50c. each, the 4 for \$2.00

Address **American Beauty Rose Co., SPRINGFIELD, OHIO**



LUTHER BURBANK'S DAHLIA SEED Dahlias can be raised from seed and will bloom the first year. The seed we offer, if sown early, will bloom profusely all fall. The seeds germinate as easily and certainly as Zinnias and from the very start are strong, stocky little plants. Transplant them carefully, as their growth demands, and keep the soil moderately moist. When all danger from frost is over, plant them in the border in the garden, and from then out they will grow as well as if from roots. The seed we offer is of Luther Burbank's own saving, and he writes: "This seed will produce a greater proportion of large, clear, bright-colored, perfect double flowers than any ever before offered; 90 per cent. of good flowers can be expected." The colors are salmon, light and dark crimson, deepest purple to maroon and almost black, light straw, deepest yellow and a few white, mostly of the Cactus-type. **Pkt.** (50 seeds), **30c.**; **3 for 75c.**, with Vaughan's 1905 Catalogue.

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NORTHROP, KING & Co.'s
SENSATIONALLY EARLY, NEW
SWEET CORN

is ten days to two weeks earlier than any other variety. The tenderest, juiciest, sweetest and most productive sweet corn ever grown. Sited to all soils and climates. Every private and market garden should have it.

For 16c in stamps we will mail you 500 seeds of Peep O'Day Sweet Corn—enough for sixty hills; also our 1905 Pictured Catalogue of Northern Grown Farm, Vegetable and Flower Seeds; also "Seed Truth," an attractive book—tells how to buy seeds to best advantage.

Or we will mail FREE our 1905 Pictured Catalogue and "Seed Truth," as described above.

Genuine Peep O'Day is sold only in sealed packages bearing our name, trade mark and seal.
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You can make more money if you plant intelligently. Write and tell us about your soil. We'll send you our **Free Descriptive Book**. Over 200 varieties.

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Annual Flowers
The Very Earliest Flowers

MARCH is the great month for starting flower seeds indoors, but there are certain days in February that stir one's blood with a desire for gardening, and then is the time to saw up an old soap-box or two and start some seeds of kinds that are slow to germinate or require an extra long season of growth. For the special purposes mentioned in "The Gardener's Reminder" (page 9), the following are highly desirable:

GOOD THINGS TO START NOW

- | | |
|------------------------|------------------------|
| Tuberous begonias | Variegated periwinkle |
| Dusty millers | Single dahlias |
| Cigar plant (Cuphea) | Verbenas |
| Ten weeks' stock | Ageratum |
| Scarlet sage or salvia | Canterbury bells |
| Tufted pansies | <i>Cobaea scandens</i> |
| | Cosmos |

These may all be raised from seed started in a sunny window in February. Have you a south or southeast window in any of your living-rooms or in a light cellar?

If so, you may raise enough plants to beautify a large garden. A greenhouse is not essential for this purpose.

The first things to procure for the starting of these seeds are some "flats" or shallow boxes. These should be about three inches deep and of a length and breadth to be convenient to handle. They must have cracks or holes to provide drainage, which should be further insured by pebbles or similar material in the bottom of the box.

Next get the soil. This should be good, rich garden loam. Fresh manure need not be added, as it may cause too quick a growth. The object is to have the plants strong and stocky. Sift the soil, so it will be porous, not hard and lumpy. Now you are ready to sow your seed. The ordinary-sized ones should be planted to a depth equal to four times their own diameter. The very small seeds should be hardly more than pressed into the soil, and the "powdery" ones should have a pane of glass placed over the box to prevent their drying out altogether. Make the soil moist and press with a board after the seeds are planted, or they may dry out.

During growth keep the soil moist by means of a rubber bulb sprayer; any other kind of watering is likely to wash the seeds out. Try to strike a happy medium in the amount of moisture, for too much will give a chance to fungi, which cause the seedlings to damp off, and too little will interfere with their sprouting at all.

Next month there will be given in this department full directions concerning temperatures, transplanting, and later treatment.

A. R. M.

Plants sometimes need to be washed as well as fed. The roots may be moist, and the leaves discovered. How easy to bathe them if you have a



CALDWELL TANK AND TOWER

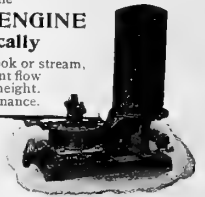
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by the power furnished by any brook or stream, however small, and produces a constant flow in your house at any distance or any height. Absolutely no cost of maintenance. Requires no attention. We make a specialty of equipping country places with a complete water-works system, extending to stable, garden, greenhouses, etc., 4,500 in successful operation. Catalogue and estimates on request.

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GARDEN SPRAYERS

Healthy trees, shrubs, vegetables, and fruit are possible only when freed from insects by using the

Auto-Spray

the simplest, most economical and improved compressed air sprayer. Requires no continuous pumping as do the knapsack sprayers and bucket pump. A few strokes of the plunger compresses enough air to cover a quarter-acre of closely planted flowers, fruits & vegetables. Capacity four gallons. We manufacture the largest line of

HAND AND POWER SPRAYERS

in America. Outfits specially adapted for destroying the San Jose Scale. Send for catalogue describing all kinds.

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292 State Street, Rochester, N. Y.



Rhodes Double Cut Pruning Shear



RHODES MFG. CO.
481 West Bridge St., Grand Rapids, Mich.

Cuts from both sides of limb and does not bruise the bark. We pay Express charges on all orders. Write for circular and prices.



LILIUM AURATUM

“Consider the Lily”

LILIUM AURATUM “The Golden-Rayed Lily of Japan”

Monstrous pure white flowers, thickly studded with crimson spots. Each petal marked with a wide gold band. *This beautiful Lily* attains a height of about five feet, and has been known when planted out to bear *over one hundred blossoms* on a stem—but, of course, this is exceptional. Like all Lilies, *Liliium Auratum* should be *planted deep*. It is *perfectly hardy* and succeeds anywhere grandly, also when planted among beds of Rhododendrons, shrubbery, etc.

BODDINGTON'S QUALITY LILIUM AURATUM BULBS, Extra Selected, 25 cents each. \$1.50 per doz. \$12.00 per 100.

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“Annunciation Lily”

One of the most *beautiful and chaste* of the hardy white Lilies.

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Extra Selected, 10 cents each, \$1.00 per doz., \$6.00 per 100.

BODDINGTON'S “QUALITY” COLLECTION of 12 Choice Lilies in 12 Varieties for Outside Planting, \$2.50

Write to me for my *Autumn Bulb Catalogue*, which contains a full line of *Holland* and *other bulbs* for *indoor forcing* or *outdoor planting*, and over *thirty varieties* of **Hardy Lilies**, and which *Catalogue* is beautifully illustrated and contains much cultural direction—it's *free*.

ARTHUR T. BODDINGTON, SEEDSMAN, 342 West 14th St., New York

LILIUM LONGIFLORUM (Japan Grown)

“The Hardy Easter Lily”

This is a prototype of the Bermuda Easter Lily—both in growth, form of flower and color, which is pure white, but with this exception it is perfectly hardy.

BODDINGTON'S QUALITY LILIUM LONGIFLORUM BULBS,
Extra Selected, 15 cents each, \$1.25 per doz., \$10.00 per 100.

A Peach and Apple Orchard for \$12.50



IT is possible for you to plant an acre orchard of the finest apple and peach trees, such as we sell to the large commercial orchardists, for twelve and a half dollars. Is there any similar investment in any sort of planting that will give you so much pleasure and return of such practical value? An orchard of this size will not only supply a family with sufficient fruit for eating fresh, for cooking and for preserving, but enough to store away for furnishing the table with fruit all winter, and still enough over to sell at a good profit.

Or suppose you have an acre of unused land, is there anything that you can plant on it that will require as little work and attention as an orchard? As an example of what can be done, we might mention one of our customers, who netted this season \$14.00 from one four-year-old Elberta Peach Tree! An acre contains a hundred trees. Another customer netted \$8.00 from one ten-year-old Yellow Transparent Apple Tree. An acre at this rate would yield a profit of \$800! Still another cleared \$200 from one acre of Strawberries. These are just three out of a score of instances we might mention.

Believing that there are many readers of THE GARDEN MAGAZINE who would take advantage of an opportunity of planting an orchard at the low prices at which orchardists purchase stock, we make the following attractive offers:

- | | |
|--|---|
| <p>For a One-Acre Peach and Apple Orchard
50 Elberta Peach Trees, fine one-year-old stock } \$12.50
50 Yellow Transparent or Baldwin Apple Trees }</p> <p>For a One-Acre Pear and Apple Orchard
50 Bartlett Pear Trees
50 Yellow Transparent or Baldwin Apple Trees } 17.50</p> <p>For a One-Acre Apple Orchard
100 Yellow Transparent or Baldwin Apple Trees 15.00</p> | <p>For a One-Acre Plum and Peach Orchard
50 Elberta Peach Trees . . . } \$15.00
50 Abundance Plum Trees }</p> <p>For a One-Acre Cherry and Apple Orchard
50 Early Richmond Cherry Trees } 20.00
50 Yellow Transparent or Baldwin Apple }
Trees }</p> <p>For an Acre of Strawberries
1,000 Strawberry Plants 3.00</p> |
|--|---|

Any other varieties of the fruits included in these combinations may be substituted for those listed. Those mentioned, however, are the most popular varieties among the orchardists, who naturally select the best for yield and quality.

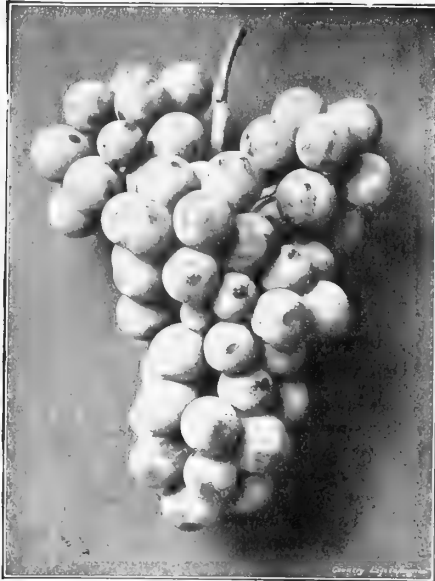
These low prices are possible because we are one of the largest growers of fruit trees in America, having more than a thousand acres in our nurseries, and sell to the large orchardists of the country in carload lots. We frequently sell for single orchards from fifty to one hundred thousand trees.

The trees in the above offers are all fine stock, and are just what we supply to the commercial orchardist. This stock is grown in the rich Maryland soil, and is perfectly hardy in severe Northern climates.

We shall be glad to advise any reader of THE GARDEN MAGAZINE relative to the planting of an orchard, whether large or small, and suggest other combinations than those offered above. Write us today.

J. G. Harrison & Sons, Nurserymen, Berlin, Md.





Grape Vines

NO garden is complete without a sufficient number of grape vines to supply an abundance of this delicious fruit. For nearly 40 years we have been furnishing high grade vines for this purpose.

Q We will send ten large vines of the best table varieties, including three red, three white and four black for \$1.00 delivered free. Send for our elegant Illustrated Descriptive Catalogue and Price-list.

T. S. HUBBARD CO.

Grape Vine Specialists

Fredonia, N. Y.

"You plant good seed if you buy of Miss White."

SEEDS

Send free, my dainty catalogue of the choicest and rarest of beautiful flowers. If you inclose 6c. and addresses of two other flower lovers, I will send you also my Surprise Packet (500 seeds of 20 choice annuals, mixed) and certificate for my 5th Annual Prize Contest for flowers grown from it. First prize, \$50.00. Catalogue gives particulars. Write me—do it now.

MISS EMMA V. WHITE, Seedsman
5010 Aldrich Ave. So., MINNEAPOLIS, MINN.

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in America

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The WINDOW GARDEN



A Boston Fern with Fronds More Than Eight Feet Long

THE fern shown below is probably a sport from the Boston fern (*Nephrolepis exaltata* var. *Bostoniensis*), differing from it in having wider fronds. This was sent me without a label by one of the leading plant companies as a premium with a large order in the spring of 1899. It then had three or four small fronds, none more than eight inches in length. I potted the young plant in one-half wood soil, a little well-rotted barn-yard manure, and good garden soil. It grew luxuriantly for three years without change of soil. In the fall of 1902 I took it from the pot and with a sharp carving-knife cut the roots in four parts, carefully separating the fronds. I then gave fresh soil, potting the largest in large tin pail, with



48. A Boston fern with more than 200 fronds, the longest of which measures eight feet four inches

about two inches of broken pots in the bottom. I gave plenty of water when required, which, during the winter, when the house is warm, is almost daily. The house is heated with combination steam and warm air. The fern is placed on a bracket between the two center windows having a southwestern exposure. I do not move the plant in the summer, but by drawing down the shades and closing blinds of all except the eastern window protect it from the strong sunlight in hot weather.

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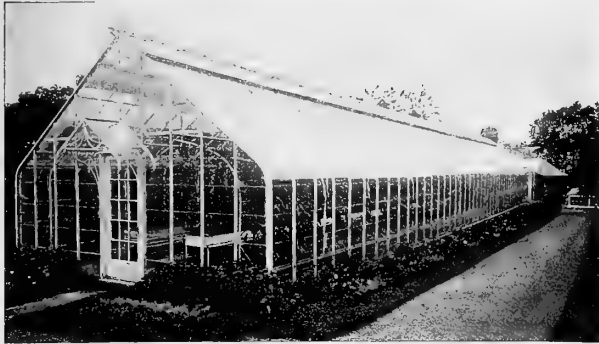
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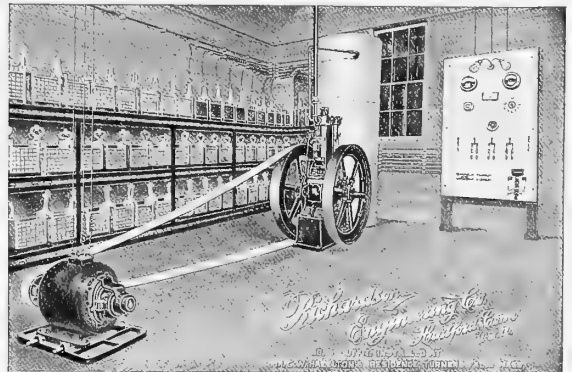
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I know of one family of five at Fresno that supplies much of its own fruit, even on so small a town place as three lots, 75 x 150 feet in all, with no cost but the water to irrigate the trees, and the slight trouble of picking the fruit. From six carefully tended trees they gather a succession of fruits from June to December. First, the apricot bears more than enough to supply the table daily with fresh fruit and delicious ices. What is left over from these uses is canned or made into marmalade, several quarts of each being stored away for the winter. All this from one tree not yet fully grown!

Then the fig-tree yields the first of its three crops for the summer. Fresh figs with sugar and cream are served each morning for breakfast. Much of the fruit cannot be eaten this way, and falls to the ground before it can be picked. These are dried and packed away, or candied, or made into preserves. With short intervals between, two more crops ripen before the summer is gone.

A pear-tree and an almond-tree are just coming into bearing.

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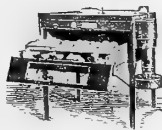


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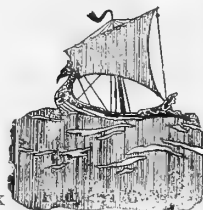
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SUGGESTIONS



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This sort of friendly and informal competition is very popular among amateur gardeners in England, and it is to be hoped that Americans are not deficient in imagination and ingenuity in the planning and execution of their gardens. As a sample subject, we would suggest "How to Have More Fun and Less Work in the Garden."

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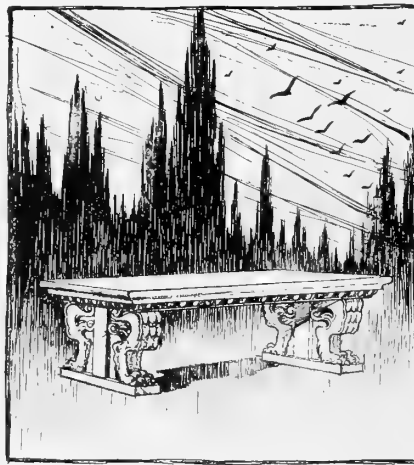
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LOOK FOR THIS TRADE-MARK



Forcing Rhubarb and Asparagus Without Expense

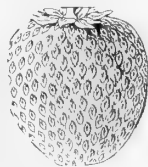
RHUBARB and asparagus may be "rushed" in early spring and brought, steaming, to the table from two to four weeks earlier than is usual with the home-grown product. Set half a barrel, with both ends out, over a clump and force it into the ground slightly. Pile fresh stable manure, steaming hot, against the outside of each half-barrel, and lay hotbed sash across the top if weather is still freezing cold. A four-sided box, smaller at top than at bottom, is used for the same purpose, and though more convenient, is not always so available as the half-barrel. Cover the barrel with old bagging or straw. During March, three weeks will give a crop of excellent, tender rhubarb. The plant is not injured by this mild forcing, and can be used for the same purpose next year.

If the plants are thus protected by boxes or barrels in fall before freezing, and packed loosely inside and solidly outside with litter, good, tender stalks may be had even earlier. The litter should be cleared away in February and fermenting manure used as described above.

Coldframes, hotbeds, greenhouses and mushroom caves are all used for forcing rhubarb, but lacking these one may utilize an ordinary root-cellar. The only requirements of this hardy plant are warmth and moisture. It will grow best in a temperature of from 45° to 60°. The less light they have the tenderer the stalks will be and the ruddier their color. The acidity also is less in cellar-grown pie plant, and less sugar is required in cooking. For cellar forcing, plants should be dug any time after frost from beds three or four years set. They should be lightly covered, to prevent alternate freezing and thawing, and allowed to remain outdoors until slightly frozen. The roots may then be packed closely in a box or even on cellar floor. Soil should be filled in between the roots, and the crowns buried from four to six inches. The temperature should be even and the soil moist. In a cold cellar a lighted lantern placed near the plants often supplies enough heat.

A dozen strong roots will supply a small family with a taste of these vegetable, so delectable in earliest spring. The roots once forced in the cellar are thrown away. The family asparagus and rhubarb beds that have had good care for several years ought to be able to spare a few well-stored roots for this purpose every winter.

STRAWBERRIES



Finest plants ever grown

WE are engaged in testing out and breeding for profuse bearing the varieties that should have preference. Whatever else you will plant this spring, don't omit

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THE GREAT NEW VARIETY

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propagated in a favorite climate, include every variety that is choice in Apples, Peaches, Pears, Plums, Grapes, Cherries and Strawberries. We are shipping plants and trees to nearly every State in the Union. **Safe delivery guaranteed.**

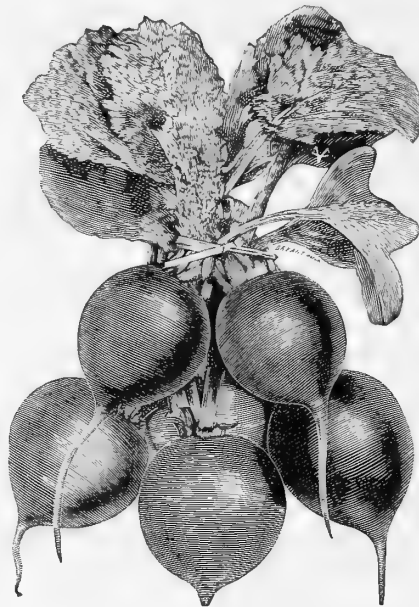
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ANSWERS

to QUERIES



RENOVATING AN OLD ORCHARD

Q. We have just bought an old orchard of apple, pear, and cherry trees, some dead, some diseased, others in a hopeful condition. What can we do with them before spring?

A. Get busy at once. Cut down the hopelessly invalidated and the dead trees and have them cremated, but save their precious ashes. Grub out the stumps. Saw off smoothly the diseased branches close to the trunk or fork, leaving no stub to invite decay. Chisel out the rotten wood, rake the fallen leaves where larvae and infection lurk, and make bonfires of all this rubbish. The tree surgeon should use creosote stain, tar, or orchard paint on every amputated part. Fill the chiseled cavities with Portland cement (1 part) and sand (6 parts), applied with a trowel on a mild day, when there is no danger of freezing before the paste hardens. Buy a spraying outfit and write to your State Experiment Station or the Department of Agriculture, Washington, for directions for mixing your own insecticides. Begin to apply them early, and continue to spray with regularity while insects may crawl or fly. Invite chickadees, nuthatches and woodpeckers to help you exterminate insect pests by hanging lumps of suet or marrow-bones in the trees. Have houses for bluebirds ready by March 1st. Spread well-rotted manure or a high-grade commercial fertilizer in the spring, plow or harrow it in, using a disc harrow, if possible, to cut up the old sod. Dig about the roots of trees with a fork, so as not to tear them. Set out well-grown young trees between the old broken rows, which may disappear when the new orchard comes into bearing. Plant red clover or cowpeas for a cover crop, not only to cut green for the cows, but to plow under and add humus, nitrogen and bacteria to the starved soil. Keep a few beehives in the orchard to insure well-fertilized blossoms. The rejuvenated old trees will give you an abundance of fruit until the new orchard crowds them off the field.

AN ASPARAGUS BED

Q. I have asked many people how long it will take to make a new asparagus bed bear. The answers vary from one year to seven years. I should be glad to have your judgment and learn just how to go to work and what varieties to plant.

A. Much depends upon your stock. Don't buy baby roots or "culls," but select large, vigorous, two-year-old plants of the Colossal, Palmetto, Barr Mammoth and Mammoth Columbian White if you would have all the



MELLIN'S FOOD BABIES

Result of Guessing Contest

The above portraits were shown in our exhibit at the St. Louis Exposition. We offered \$250.00 in gold to the person who could correctly guess the boys and girls in the 20 numbered pictures.

No one guessed 20 correctly.

Mr. George Harrison, Enfield, N. C. was awarded the \$250.00 the only person guessing 18 correctly, this being the largest number of correct guesses.

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No other infants' food received so high an award.

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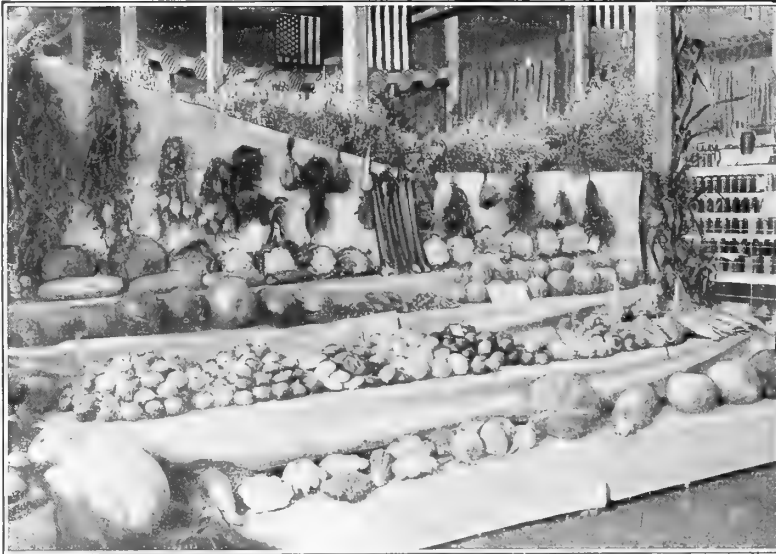
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Burpee's Seeds

are famous for producing most of the prize-winning products at State and County Fairs. The illustration above shows the first prize collection at OREGON

STATE FAIR, while photographs (or letters from the winners) of the first prize exhibits at the 1904 State Fairs of New York, Minnesota, Wisconsin, Kansas, Iowa, and Indiana are published in our NEW CATALOGUE FOR 1905. Many other prize awards, with full particulars, are published in our *New Prize Supplement for 1905*. Besides several GOLD MEDALS, the products of BURPEE'S SEEDS *Exclusively* were awarded

The Only GRAND Prize for Vegetables at St. Louis World's Fair!

IF YOU would have the very best seeds that can be grown, you should study BURPEE'S FARM ANNUAL FOR 1905, "The Leading American Seed Catalogue." An elegant new book of 178 pages, with hundreds of illustrations and beautiful colored plates, it honestly describes all varieties worth growing, including SUPERB NOVELTIES, which cannot be had elsewhere. Interesting *photogravures* illustrate the conduct of the World's Largest Mail Order Seed Trade, and give glimpses of our famous FORDBROOK FARMS—the most complete trial grounds in America. Your garden will *not* be as good as it should be, unless you first study BURPEE'S FARM ANNUAL FOR 1905. Shall we mail you a copy? If so, write TO-DAY!

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Every owner of a home should have one or more of "The Minnetonka," pride of the Northwest. Order to-day.

Free Catalogue of Seeds, Trees, Plants, etc.

L. L. MAY & CO., ST. PAUL, MINNESOTA. Mayfield Nurseries—Most Northern in America

standard white and green varieties. Empty the ancient treasure of your manure pit into trenches two feet deep and work it well into the soil, which, if inclined to stiffness, should be lightened with sand or sifted ashes. It goes without saying that the plot must be well drained. If the loam is not naturally rich and sandy, make it so. Bury the roots six or eight inches deep in three rows eighteen inches apart, to form the bed, which should have at least a foot of soil beyond the outer rows. Gradually draw the earth around the shoots as they rise, and keep down all weeds. Cover the bed in the autumn with coarse stable manure. Feed the plants generously for two years, when you may confidently expect them to repay you in kind. When well-grown plants are four years old, they should begin to supply the family, and a rightly cultivated bed should last unimpaired through one generation.

GERANIUMS IN BLOOM ALL WINTER

Q. How can I have geraniums blooming in my sitting-room window by Thanksgiving and keep them gay all winter?

A. Make cuttings from old plants in May or after danger from frost, choosing only the most vigorous shoots. Cut close to a joint with a sharp knife, and slit the stem where you put it in the earth. Give the cuttings good, light soil, but not over rich. Sink the pots in the open ground under a shady tree. Usually, cuttings are made too late to insure vigorous plants and early blossoms.

A CHEAP HERBACEOUS BORDER

Q. There is a part of our home acre where I long to see a hardy herbaceous border about fifty feet long, yet I have no more than ten dollars to spend on it. Is the dream impossible?

A. Not if you will wait a year for results and are willing to do much of the necessary work yourself. Set aside a small plot in your vegetable garden for a nursery, and spend half your appropriation, if need be, on having this and the proposed border next the lawn well spaded and manured. Buy only such seeds as you cannot beg, borrow or steal from your friends' gardens. Plant Oriental poppies, Boltonia, sweet-williams, pyrethrums, larkspurs, foxgloves, coreopsis, chrysanthemums, hollyhocks and other old favorites in May. Weed and water them throughout the summer, transplant them to your border in September, cover them with stable litter in the autumn, and look for flowers the next season, with greater and greater profusion each succeeding year. Save a dollar or two for narcissus and other Dutch bulbs. The cheap sorts are very charming. Try to have only flowers of harmonious colors in bloom at once, and distributed from crocus to chrysanthemum time. Do not overlook the decorative and lovely wild flowers, most of which improve surprisingly under cultivation. The tall Canadian goldenrod is superb in the hardy border; so is the cardinal-flower, the mountain laurel, butterfly-weed, columbine, wood or meadow lily, the swamp-rose mallow, the iris, and the meadow-rue among a host of others. Violets make a beautiful edging.

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Retinosporas . . .	" 10 "
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White Spruce . . .	" 10 "
White Pines . . .	" 10 "
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Norway Spruce . . .	" 10 "

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Norway Maples up to 25 ft. and up to 10 in. diameter	Purple Beech . . up to 18 ft. with spread of 14 ft.
Horse Chestnut " 16 " " 4 " "	American Elms " 18 " and up to 5 in. diameter
Pin Oak . . . " 16 " " 5 " "	Oriental Planes " 18 " " 4½ "
American Lindens up to 20 ft. and up to 6 in. diameter	

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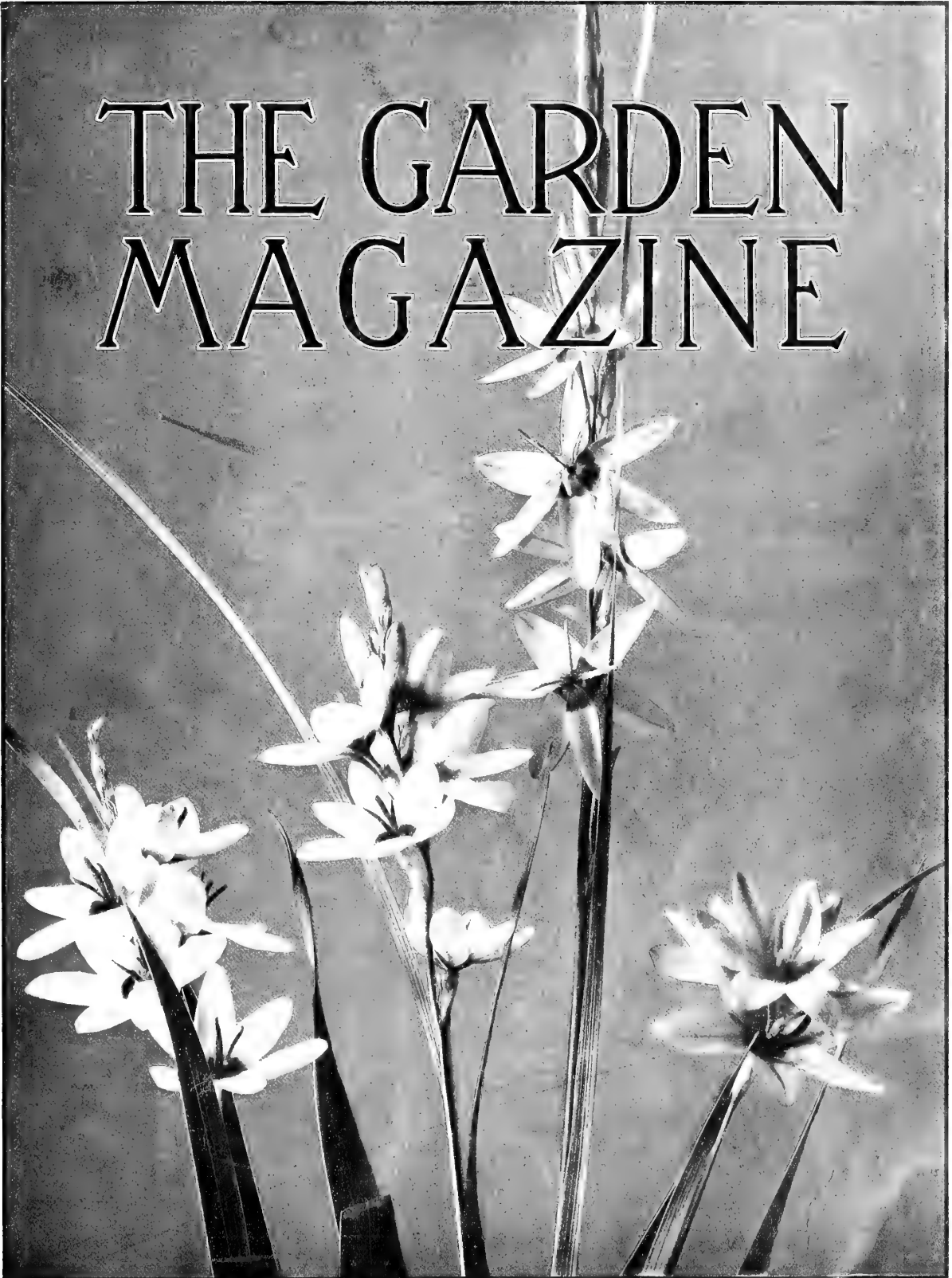
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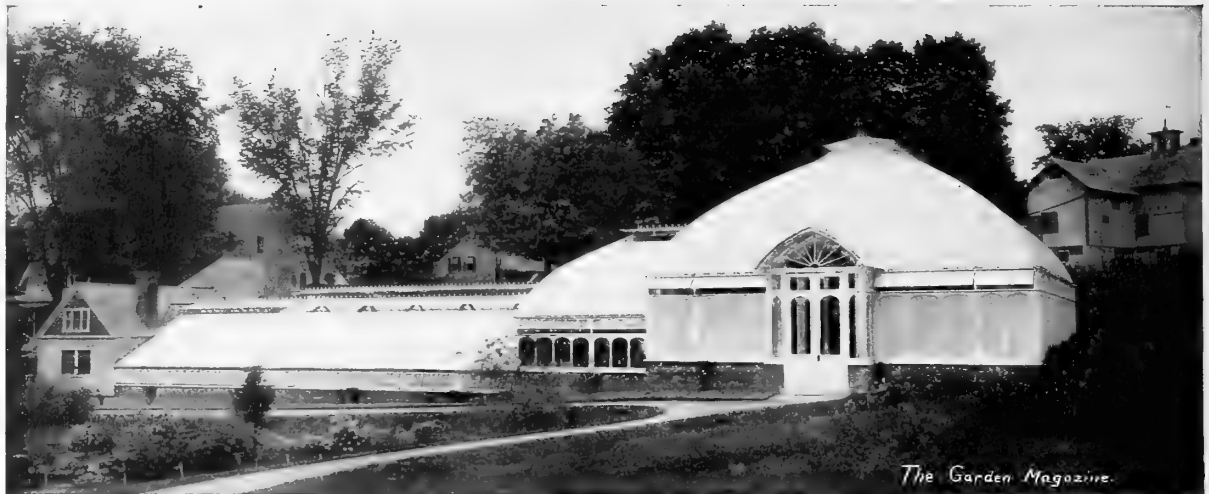
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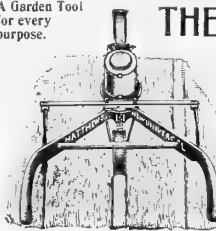
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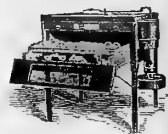
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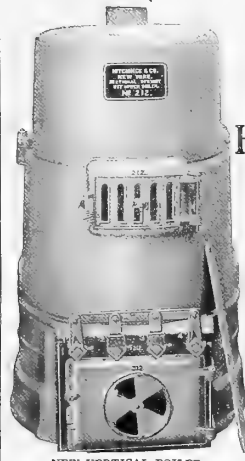
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Country Life in America

THIS magazine is non-returnable: dealers naturally buy only what they actually need, and we have constant complaint from readers that the magazine is out of print at the news-stands.

May we suggest that you order a year's subscription on the following coupon, for these reasons:

- 1st:** You will get without extra charge the three double (50-cent) numbers: GARDENING MANUAL, HOUSE-BUILDING NUMBER, CHRISTMAS ANNUAL.
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- 3rd:** We are usually unable to supply back numbers, and, as they are so scarce, charge 40 cents for them when over three months old (50 cents for back double numbers).

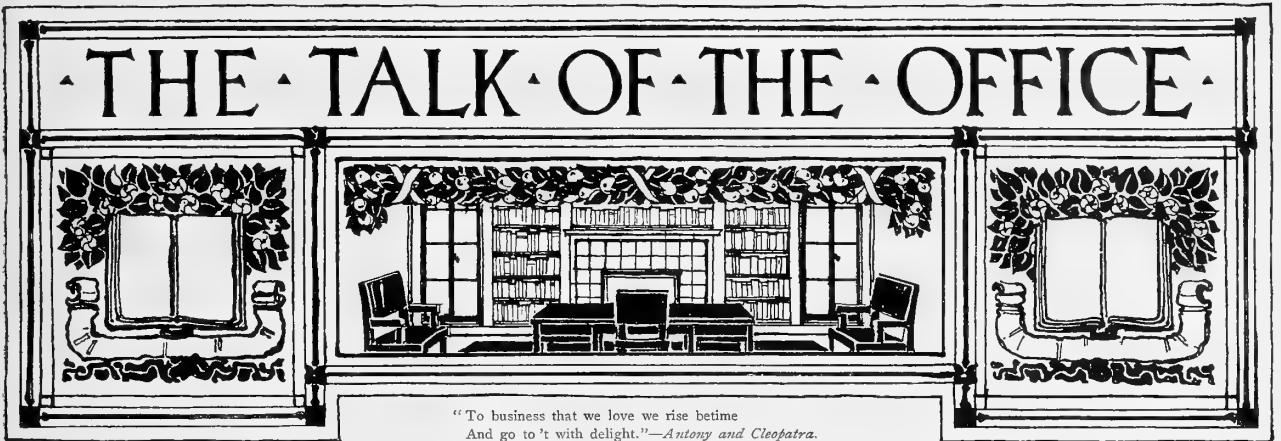
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[G-270-X]



"To business that we love we rise betime
And go to't with delight."—*Antony and Cleopatra.*

SUCCESS OF THE FIRST NUMBER

IT is perhaps unwise to feel too much elated over the success of an initial number of any magazine. We realize that a kindly interest must be followed by improvement month after month before a public finally accepts a new magazine at its proper worth. But at all events, the start of THE GARDEN MAGAZINE has been vastly more successful than we expected or even hoped for. In less than two weeks the first issue was entirely sold out; and the people for whom it was designed wrote enthusiastic letters to say that it was the sort of magazine which they wanted and had long waited for.

The time from the first conception of the magazine to the day when it was actually printed and published was less than two months. Preliminary estimates were drawn up for a thirty-two-page monthly, and a year's income and plans were hastily estimated based on similar experiences with our other magazines. The great interest shown by the advertisers made it necessary to enlarge the magazine to forty-eight pages. The income from sales and subscriptions has already been three times the amount estimated, and the appreciation and encouragement of our friends has made the starting of the magazine a pleasure instead of a burden. The supply of the first issue being exhausted, subscriptions received after February 1st begun with the March number.

We want especially to thank the dealers in gardening supplies of all kinds, from seeds to trees and hoes to plows, for their very cordial and helpful co-operation. A magazine which has no axe to grind and no seeds to sell, but devoted exclusively and single-heartedly to the increase of interest among people who own and love a garden, has found a waiting market, as we knew it would.

THE PLANTING NUMBER

The April issue of THE GARDEN MAGAZINE will be a great help to simplify the rush at the busiest moment of the year. The planting table for vegetables is the simplest and most practical device of the kind that we have ever seen, and the same is true of the planting table for flowers. This shows just when to plant, how deep, how far apart, whether the plants are to be thinned or transplanted, and when they should be fit to eat or enjoyed. Another

strong feature is an important article on how to grow hardy roses.

The beginner is likely to plant too much of one thing and not enough of another, and to plant the varieties which are best suited for commercial conditions when he might just as well have the finer flavored sorts which are suitable for the home garden.

The whole number is full of practical suggestions for saving time, worry, and expense, and for getting the varieties of fruits, vegetables, and flowers that stand for quality in the home garden. There will be, we expect, more text and more pages, but the price remains as usual, ten cents.

THE WORLD'S WORK

There is published in the March number of *The World's Work* an article on Lhasa, by Mr. Perceval Landon, which, all things considered, and with its illustrations, is one of the most remarkable we have ever printed. Mr. Landon went to Lhasa with the British expedition commanded by Colonel Younghusband, and represented the *London Times*. He had the knack of photography, and his large kodaks are more beautiful and interesting than any ever made in that strange country. He describes for the first time the Forbidden City, which has always been closed to the outside world, but which was invaded for a few brief weeks, and has since been shut up again as tightly as ever.

Mr. Landon's book, "The Opening of Tibet," which Doubleday, Page & Company will publish at once, tells the story of this expedition with a preface by Colonel Younghusband. It is the most important book of travel issued for a number of years.

COUNTRY LIFE IN AMERICA

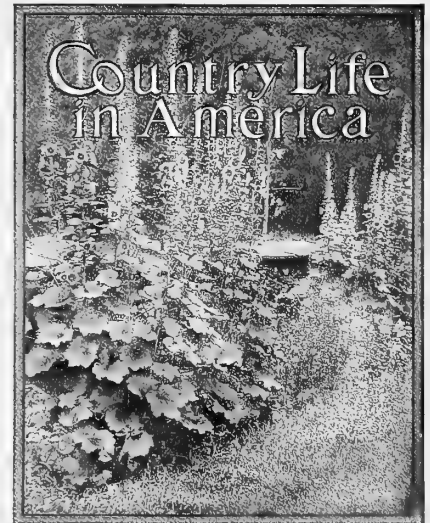
The March number is the Annual Garden Manual. It contains more pages, more articles, and more pictures than any number we have ever printed. We hope also that in many practical and helpful ways it is better than its predecessors.

Unlike most magazines, *Country Life in America* has to work a full year ahead. The pictures printed in these pages (and they go to press when the snow is heaviest) were of course made last summer; almost every article was planned the early part of 1904.

This Garden Manual contains nearly 150

pages, with 200 illustrations, and covers every branch of gardening interest; it is the most luxurious and beautiful magazine in the country, with its great, broad pages and large plates. These are some of the articles: Hardy Roses for the Garden; An Italian Garden that is Full of Flowers; Bamboos for Every Part of the United States; A Garden of Surprises; A Wind-swept Garden; A Natural Japanese Garden; Prize Articles by Amateurs, and a score more.

The price of this double number is 50 cents, but to subscribers there is no extra



Cover for the March Gardening Number

charge. If you do not have *Country Life in America* regularly, fill out the following form and get the three double numbers (including the Christmas Annual and the Double Building Number) as part of your subscription. Price, \$3.00.

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See illustration on cover, March number, COUNTRY LIFE IN AMERICA

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"A Plea for Hardy Plants," by J. Wilkinson Elliott, contains much information about Hardy Gardens, with plans for their arrangement. We have made arrangements with the publishers of this book to furnish it to customers at a very low price. Particulars on request.

ELLIOTT NURSERY CO., - PITTSBURG, PA.

The Garden Magazine

VOL. I.—NO. 2

MARCH, 1905

ONE DOLLAR A YEAR
TEN CENTS A COPY



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[For the purpose of reckoning dates, New York city is generally taken as a standard. Allow six days' difference for every hundred miles of latitude.]

The One Important Thing

START early vegetables and flowers. Start them in shallow boxes in the kitchen window sill. Start them in a hotbed, if you have one. If not, make one. Start them anywhere, but do it now, and beat your neighbors. Why not have fresh vegetables in May instead of July?

HAVE YOU NEGLECTED THESE THINGS?

1. Have you sent for catalogues?
2. Have you manured the lawn, the strawberry bed, and the hardy border?
3. Have you studied the fertilizer problem? Do you see just how to get bigger crops than you ever had before?
4. Have you "read up" spraying, planned a campaign against insects, and invested in a spraying outfit? Or will you let the bugs get the best of you this year?

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POTTERING CHORES DOWN CELLAR

Make the fruit cellar better, and have it separate from the vegetables.

Look over potatoes, celery, vegetable roots, dahlias, cannas, gladiolus, and, if you are fortunate enough to have any, apples and pears.

Clean the rusty tools, sharpen the hoes; fix a new and attractive place for the garden implements. Mark a place for each one on the wall, if you like, so that nothing will be lost or misplaced. If you haven't a wheel-hoe, you are behind the times! Get one now, and get enthusiastic about the best new garden-tool of the last century!

THE GREAT SPRING CLEANING

Clean up, burn up, bury and hide. Plant sweet peas. Rake, fertilize and roll the lawn. See the Lawn Department. Prune fruit trees and hybrid perpetual roses.

Tie up vines on the porch. Train your berry bushes. Put nitrate of soda and common salt on asparagus and rhubarb beds.

THE HARDIEST VEGETABLES

Sow outdoors toward the end of March the earliest varieties of these cool-season crops: Beets, carrots, leeks, onions, peas, potatoes, radishes, spinach and early turnip.

GROWING TENDER PLANTS WITHOUT GLASS PROTECTION

About March 15th, uncover bulb beds and the hardy border. Leave the mulching material handy, so that you can replace it if

there is danger of a freeze. Most people uncover too early or too late. Uncover early and do all you can to gradually harden the tender young shoots. Read in the Bulb Department how the beautiful flowers on this month's cover are grown without glass protection in Massachusetts.

THE GREAT HOTBED MONTH

Read the first two articles and find out how to make a hotbed.

Sow early varieties of beans, beets, Brussels sprouts, cabbage, carrots, cauliflower, celery, cress, kohlrabi, lettuce, onions, parsley, parsnips, peas, potatoes, radishes, spinach and early turnips.

A hundred miles south of New York city sow the heat-loving vegetables: melons, peppers, cucumbers, egg-plants and tomatoes.

NEWS FROM THE SOUTH

(Latitude of Richmond.)

Everything doing and all at once! The planting season is in full swing. Every one is sowing seeds outdoors of all the hardy vegetables. Under glass, gardeners are sowing the hot-season vegetables named above.

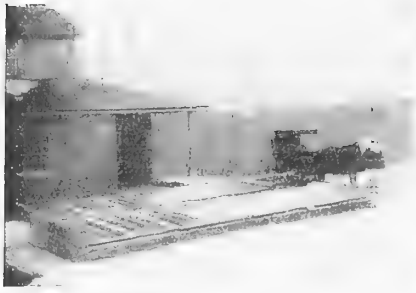
People are planting Irish potatoes and every other "root, bulb and tuber," asparagus, rhubarb and onion sets.

The happy owner of a hotbed is setting out his carefully hardened plants of lettuce, cabbage, cauliflower and onions.

The mistress oversees the planting of her herb garden.

The bare spots in the lawn are being sprinkled with blue-grass seed.

Every one has packets of flower seeds and every one seems happy.



49. A country gentleman's range of hotbeds. The permanent type; made of cement



50. Threefold burlap mats instead of the old-style straw mats to keep out frost



51. A roll of paraffined cotton cloth used to cover and protect the burlap mats

The Making of a Hotbed—By H. Barry Long Island

A JOYOUS OCCUPATION FOR THE DULLEST MOMENT OF THE YEAR—A PRACTICAL WAY TO HASTEN THE COMING OF SPRING

Photographs by the author

THE day dawned bright and balmy. The snow was disappearing at a remarkably rapid rate, and the first feeling of spring stirred in the blood. It was the New Year, and even though the shortest day of our northern year was scarcely at our backs, the sun seemed already to have gained in power and the days to have grown longer. One could not remain in the house. The garden called irresistibly. But what a blank disappointment confronted one as the feet met the unyielding and frozen ground! It forced upon the unwilling senses the fact that spring, real spring, was yet many weeks distant, and that snow, ice, storm and thaw were to follow each other many times before the buds and birds would come once more. Yet the senses refused to accept the inevitable. We felt that we *must* have growing things now! We must dabble in the soil and see seeds sprout. There was but one possibility—a hotbed. So a hotbed we resolved to have.

We knew nothing about it, but we felt sure that there would be several different ways and that one of them would be the best for us. There is always a better way of doing the common thing, and we always try to find it. There is no fun in doing the common thing in the common way. Our investigations usually start in books, but never end there. We prefer to see and examine the real thing, then discuss it with our friends and neighbors who we know have had experience. Then we evolve the new way. Don't follow literally either books or your neighbor's practice, but consult them both.

The fundamental principle of a hotbed is to make and maintain heat at a small cost. This may be a misleading statement, for it is not so important that the heat be made and maintained as that the cold be kept out. The cheapest way to supply heat is to use fresh manure, which gives off heat during fermentation. A hotbed may be made by running steam through pipes in the bottom of the bed, but this is never done unless special conditions give one the opportunity to do it economically.

Dig a pit three or four feet deep and the size of the frame or frames which are to cover

it. Set into and around the edges of the pit a frame of wooden planks. Throw in two feet or more of fresh manure. Tramp it thoroughly to prevent too rapid fermentation or it will give up all its heat at once. Over this put four inches of fine rich soil, in which to sow the seed. Set glazed sash upon the frame and bank manure around the

screwed, nailed, buttoned or pegged. If the garden space is small, a movable frame would certainly be the best, for even where there is ground to spare, many people will prefer to have the hotbeds out of sight in summer.

A wooden structure may be purchased complete—that is, planks for the sides and ends, and a glazed sash, or as many sashes as one desires to use. The regular size of a sash is 3 x 6 feet, and the cost about six dollars. As many of these units may be placed side by side as desired, or one or two large sashes can be made to order. These ready-made hotbeds are kept by all the leading seedsmen and may be shipped anywhere on short notice. You will find them in the catalogues.

There are two distinct methods of ventilating the plants—lifting and sliding the sash.

The planks are so placed that the sash, or sashes, either lie down on them, projecting a quarter of an inch, or slide in grooves which are made on the inside of the planking. Sliding sashes are better. Lifting is not only apt to bow the sash frame, but it is liable to blow shut, smashing the glass as it falls.

But to return to the frame. Suppose you are buying the material ready to set up. Place the planks so that the sash will be on a slant toward the front, *i. e.*, the board at the back should be higher by a foot or more than the one at the front. This is done for two reasons: First, in order to shed water; second, to get as much sunlight as possible. For if the frame faces south (as it should always do, if possible), the southern sun of winter will reach it for the longest period. The planks may be made fast to corner posts, which should be placed firmly in the soil, or the ends may be mortised. These planks come with a groove on the inside, where the sash is to slide.

This information, gained from books and manufacturers, would not do for us, for we had some material which we wished to use. (It is a poor farmer or gardener that does not make use of every bit of stock-in-trade which he possesses.) So we visited a friend who has made some new hotbeds on his own plans.

This friend's frames are built of concrete, as neat and trig as can be. The walls are



52. Radishes and lettuce on New Year's day. A sliding frame is better than a lifting frame



53. Covered for the night with the burlap mats and their paraffin cover

outside to prevent frost from penetrating from that quarter.

These are the main outlines of hotbed construction. The variations are innumerable, the chief factors in the cost being size, permanence, neatness and portability.

A permanent hotbed may be made of brick, heavy timber, or cement, while a movable frame of boards may be mortised,



54. The common type of hotbed covered in anticipation of a hard night



55. The covering of old floor-matting drawn aside to show the excellent home-made straw mats



56. The best protection for a weak place. Old newspapers covering the joints

made of four inches of concrete, with an air-space of six inches, then four inches of concrete, and the whole fourteen inches are covered over with two or three inches of this compound. The beds are long, one admitting of seven 3 x 6-foot frames, while the other has eight of the same size. The covering—which all hotbeds must have to keep out the intense cold of night, consists of three thicknesses of burlap sewed together, a stick being run through one end just as a stick is run through the end of a window shade, except that this one projects a few inches at either end to form a handle. The other end of the burlap is fastened to one end of the hotbed frame. The burlap is rolled upon this stick when uncovering the frames. On the other end of the frame is a roll made on the same plan, but the material is waxed sheeting. This was made by spreading a low-grade melted paraffin on common sheeting with a calcimine brush. This raincoat is unrolled upon the burlap overcoat to protect the latter from snow and rain.

These hotbeds were just the thing for a country gentleman with a good-sized place, but for reasons connected with the bank and the children's education we decided to look further. There is a dear old-fashioned farm near us, with all the modern improvements money and ingenuity can provide. We made a pilgrimage thither and found a row of hotbeds watched over and tended by an old French soldier, long since turned gardener. These beds were covered with many strips of old floor-matting, and peeping from under these were straw mats. They looked as though the cold could not possibly penetrate, yet the raw north wind and fine sharp rain were penetrating to the marrow of our bones.

"Monsieur, can you grow things in them?" queried my wife (we were sure he could).

"Yes, madame. There is lettuce and radishes, spinach and violets in them. I will show."

The veteran uncovered the sash, and as he unrolled the floor-matting, we went into raptures over the straw mats made of golden rye straw, the heads with the grain threshed out, still upon them.

"Oh, where did you buy them?"

"I make them myself. You cannot buy," he said. "You cannot buy thick like these. Of small use the ones you buy! The wind gets in and the cold. It kills everything."

"But how do you make them and where do you get the straw?"

"I will show you after. The straw—we raise it on the farm. Yes, they are fine, but the matting—it keeps off the rain from the straw, for the straw gets wet; the frost come; then my plants all freeze. It is much work, I tell you, much work. When it snows, then I must come out and sweep the mats, and shake them, then dry, for I cannot have wet mats!" And he shook his head. "Sometimes when its vera cold I come out in the night."

What he did in the night he did not say. I doubt very much if he did anything. Probably it was like the mother who goes into the room and looks at a restless child. There is nothing to do, but she feels better when she has looked in.

Our Franco-Prussian friend now rolled back the thick straw mats and disclosed a still further protection, a time-honored one, known to all country dwellers as the best of chest-protectors, viz., old newspapers. These were laid all around the edge of the frame, while the glass rested at the upper end upon some more.

We laughed. The old soldier laughed, too, slapping his thigh and exclaiming, "The Frenchman, he have a good head!"

Then I took in some details of the construction of the frame itself. The slant was greater than any we had seen heretofore, and it seemed good. The front edge rested almost on the earth, while the entire frame was banked up with strawy manure. In fact, the glass rested upon the straw at the front. The back edge must have been raised nearly two feet, and, of course, the beds were protected by a high board fence on the north, while the slant of the frames was almost due south. The snow had been shoveled from around them, and they were set far enough from the fence for a person to work at the back of the frames. Our friend the gardener slid the sash upward, and I was surprised to find the plants so deep—a foot at least below the front edge. I did not ask any question. My common sense told me he had done this as an extra precaution against frost, for frost seldom penetrates the ground more than a foot, even in the open.

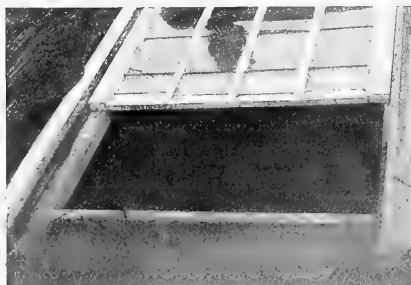
The earth was fine and rich and the heads of lettuce beautiful rosettes of green.

"Why, the walls of these beds are made of brick!" we exclaimed. "Tell us why you made them that way."

"I will tell you," replied the Frenchman. "First they were made of boards, but the mice and the rats they come in and eat my seeds when they just start and I can have nothing. So I say to myself, 'I fix you,' and then I build these. I dig out for my foundation three feet or more, then I put in one foot cement mixed with gravel and broke glass (the rat he not gnaw through that), then I build up my walls with brick and the rat he



57. Our friend the veteran soldier-gardener shows with proper pride the evidences of his skill



58. A simple form of running sash. Not as expensive as the grooved kind in Fig. 52



59. How the skillful gardener utilizes home resources by making his wonderful straw mats



60. Breaking ground for the economical type of hotbed shown by the series on this page



61. Our good neighbor drops in and kindly agrees to "help us out"

not get through that either. Then I put on my frames and have him all right."

"I notice the frames come very near the level in front," remarked my wife.

"Yes, madame, but I have them with straw banked, and the plants they are down deep. Come, I show you how to make the straw mats."

We followed, winding in and out among the quaint farm buildings (one of them is the

grape house, which we hope to describe some day). Out in the barn-yard he produced a wooden frame six feet square. At the top and bottom were holes at intervals. While we watched, the old soldier stretched cord, tarred cord or marlin twine from the top to the bottom, running the ends through the holes and making them fast. At the lower edge he left several inches of the cord, then took a handful of fresh straw, laid it against the strings, took the loose end of twine and bound it with a half-hitch. Six upright cords, and each one used on which to make a bind; two handfuls of straw make one row across and the heads are laid in the center. Handful after handful was laid on, one above the other, each row bound six times, until the frame was full. The ends were then well fastened, the twine cut from the frame, and a mat large enough to cover two sashes was completed. It was as pretty as a picture, and as easy to make as rolling off a log—when you know how.

We came home full of enthusiasm. "You can make the cement foundation and brick walls," said my wife, "but I will make the mats of golden straw. I shall feel like Ceres as I carry them in my arms."

Alas! those frames are but dreams of the future! For the present, some once-used plank and a large sash will suit us very well, for we have them ready to hand, and if the mice and rats do not disturb us it may answer several years.

However, these are the points we have gathered for practical use: The frame should be well sunk in the earth, for each year the earth and manure must be taken out and replaced. Therefore, unless the frame is well made and imbedded, it will collapse when this process is gone through with. A proper slant is important. The front of the



62. "I tramped it down well, so that it won't heat too fast"



63. Closing the incident. The home-made hotbed is now ready to produce fresh vegetables in May

bed should be not more than four inches above the earth level, while the plants inside should be a foot below the level. The entire frame should be banked on the outside with hot manure to keep an even temperature. Air should be given only on warm (above freezing point) days. Water should be given when needed, and by keeping the frame tightly closed the rising moisture condenses on the glass, falling back again upon the plants.

A Beginner's Experience with Hotbeds—By Julian Burroughs New York

EARLY VEGETABLES FROM TWO STRIPS OF LAND MEASURING TWENTY BY A HUNDRED AND TEN BY FIFTY

Photographs by the author

THE way to get early vegetables is to have a hotbed and transplant young plants to the garden. Figure 67 shows two that I knocked together in a few hours without any cash outlay. Any vegetable can be transplanted provided its roots are not too much disturbed. This is best done by using the heavy, oiled-paper pots. If they are not available, use pasteboard boxes, paper-lined strawberry baskets or even boxes divided into partitions with strips of wood or pasteboard. Shredded-wheat biscuit boxes are ideal for large tomato plants and hills of melons, as the paper can be torn away without breaking a root. Tin cans can be slit down the side before filling with earth, thus making it possible to remove the growing plant without disturbing the roots.

SEVERAL CROPS ON THE SAME GROUND

In most gardens you will see a patch of yellow-looking corn (showing a lack of nitrogen), beets, onions, cabbage, etc., each kind

by itself and not enough of any one. This year I found that the lettuce, cauliflower, beets and onions could be grown in the corn rows and do better there than by themselves, without shortening the corn crop. Thus, early in June, I started Hubbard squash between the corn rows, which took the place of the early vegetables, shading the ground between the corn and not giving the weeds a show. Each side of the row of muskmelons I put a row of early "Peep-o'-Day" corn, which was out of the way by the time the melons began to run. For melons, like all fruit-bearing, seed-ripening plants, must have sun, being unlike the plants of which we eat the foliage—i. e., lettuce, celery—which are improved by some shading. Between the hills of melons I grew bush Limas and radishes. On one piece of ground, ten by fifty, I put three rows of early potatoes, and on June 10th planted five hills of Hubbard squash between them, and on July 5th when I dug the potatoes I put in two rows of

Stowell's Evergreen corn. The corn got above the squash just in time and bore a fair crop in October after the other corn was gone. The Hubbards produced twenty-two excellent squashes. Besides the manure plowed in and put in the squash hills, I used wood ashes and ground bone liberally.

CORN ON JUNE 30TH

This year I had corn June 30th. When I told my neighbors about it they said nothing—they thought I lied. July 25th was the previous "record." Peep-o'-Day corn was what I used, planting it April 20th in boxes indoors. Under each hill I put a shovel of well-rotted manure, and on the surface of the ground worked in wood ashes liberally. Stowell's Evergreen was used for second plantings.

TOMATOES FROM JULY 8TH TILL FRST

Moore's King of the Earlies is the earliest tomato I know. I planted Chalk's Early Jewel



64. The household pets—young tomato plants in tomato cans



65. Spindly squash that remained in doors too long. Started in tomato cans



66. Transplanting melons, using paper in strawberry baskets



67. Coldframes made out of old boards and storm sash

on January 28th and had tomatoes from July 8th until frost. A dozen plants should supply a small family all summer and enable one to put up fifty cans. On my ten plants I tried experiments with soils and fertilizers, and though the one



68. "Corn cakes for dinner." Every hill of corn should yield six to eight ears

treated with muck and wood ashes ripened the first tomato, the vine that had no fertilizer at all did as well as any. Bordeaux mixture will prevent leaf blight on tomatoes.

THE FIRST PEAS IN THE NEIGHBORHOOD

In the small garden I found that it is best to grow the high or brush peas, since it is more certain and saves space. Wire-netting two or three feet high can be used, and, though not as good as brush, saves labor. Peas want potash and lime. To have the first peas in the neighborhood, proceed as follows: In March, or as soon as the frost is out of the top of the ground, spade up a strip of ground, putting in a little lime, wood-ashes, and enough dry, sifted coal-ashes to make the soil dry and mealy. On each side of the wire-netting plant a row of peas, at the rate of a quart to ninety feet, using extra-early seed, putting them on top of the ground and covering only half an inch deep. Then down each side run a piece of thin cheese-cloth, fastening it to the netting above and the ground below, making an "A" tent over the peas that will throw off snow and hard frosts. On warm and sunny days it should be let down, and only put up cold nights and during snow storms.

MUSKMELONS OF THE BEST QUALITY

Melons have a hard reputation for home planting, but I believe that even in heavy soil one can have melons in spite of drouth, blight and insects. In my garden the soil is heavy and clay, but from nine hills of Hackensack melons I had nearly a hundred cantaloups, some as large as small pumpkins and of such delicious flavor and sweetness that we jumped up and down and laughed when we ate them. Under each hill I put manure,

muck and sifted coal ashes, and on the surface I worked in wood ashes, half a barrel to the nine hills, and some sand. Next year I shall plant the Emerald Gem and cover the ground with the darkest-colored sand I can get. The sand draws the sun and the heat develops the sugar in the melons. Early potatoes, lettuce, radishes, etc., can be grown between the hills, and a row of Peep-o'-Day corn each side of them, all of which will be out of the way by the time the vines begin to run. They must not be shaded, however. Melons require nitrogen and potash. Besides the manure, next year I shall put in a compost and dried blood, also ashes and sand on the surface. Liquid manure, diluted three times with water, is the best fertilizer of all. It should not, however, be allowed to touch the foliage. For blight use Bordeaux mixture, four pounds of copper sulphate and six of lump lime to fifty gallons of water, mixed cold. As this mixture settles rapidly, it should be stirred to the very bottom thoroughly every few minutes. Otherwise, one will burn the foliage. It can be put on with



69. A beginner's triumph over insects injurious to vines of the cucumber family. One day's pick

a broom, or for \$4.55 one can obtain a brass pneumatic pump, which is invaluable for spraying beans, potatoes, rose bushes, grape vines, etc., as well as melons.

OUTWITTING THE ENEMIES OF VINES

The striped cucumber beetle is the worst enemy of the muskmelon. To fight him, first start the melons in the house or hotbed in pots or pasteboard boxes. This will not only give earlier melons, but also it will give them a start on the bugs. This year I started them on March 20th and had melons on August 10th. Second, dust the vines with tobacco dust, to prevent their eating them. Third, put air-slacked lime, mixed with turpentine, in and on the hill around the vines, or tobacco dust all around each vine where it comes out of the ground. This will prevent the beetle from going down and laying her eggs on the roots. These eggs hatch into a grub that eats the vines off underground. Fourth, plant a "trap" vine

of Hubbard squash nearby—this will call all the bugs away from the melons to the squash, where they can be destroyed with kerosene. Lime in the hill will help to keep away wireworms and cutworms, or they can be killed with kerosene emulsion or carbon bisulphide. The bugs can be caught on a tarred board or piece of fly-paper held on one side of the hill while they are fanned on it from the other.

The only effective way that man has yet been able to devise to fight the deadly squash vine borer, which is the larva of a night-flying, clear-winged moth, is to bury every joint of the running vines as they grow, thus letting them take root at many places. Then when a vine is seen wilting in the sun, examine the stalk and destroy every grub. Sometimes he can be removed without killing the vine by using the thin blade of a penknife and care. Other insects can be fought the same as for melons.

THE COST OF LAST YEAR'S GARDEN

Seed.....	\$2.10
Manure (three loads; not enough).....	3.00
Ashes (three barrels, of wood).....	1.20
One-half bag of potato fertilizer.....	1.25
150 feet of wire netting for peas....	1.20
	<hr/>
	\$8.75

VALUE OF THE PRODUCTS

Melons, 100 at 10 cents.....	\$10.00
Squash, twenty at 20 cents.....	4.00
Peas, four bushels at \$2.00.....	8.00
Beets, four barrels at \$1.00.....	4.00
Lettuce, 100 heads at 5 cents.....	5.00
Corn, 400 ears at 1 cent.....	4.00
Beans, ————	1.00
Tomatoes, three bushels at \$1.00..	3.00
Cabbages, late cauliflower, radishes, onions.....	2.00
	<hr/>
	\$41.00

Next year I expect to do better than this, especially on corn, melons and Lima beans.



70. Three good crops were raised on this ground. Potatoes were dug July 5th; squash planted June 10th; and corn planted July 6th



A SUDDEN TRANSFORMATION IN

71. This picture was taken just twenty-four hours before the one on the next page and shows the same flower bed



THE BOSTON PUBLIC GARDENS

72. Not a single plant has been added. The tulips had passed and were cut. The forget-me-nots were beneath the other flowers



73. A three-year-old plum tree ready for pruning. It has been headed-in twice, as can be seen. Do it once more. Also take out one or two of the forks which the heading-in produces. "Thin out—head back" is the rule for young trees



74. The same tree after pruning. The number of branches have been reduced, dangerous forks removed, and leaders headed-back. After this the tree will not need to be headed-back each year, but the branches should be thinned regularly every year



75. "Heading-in thickens the top." It is usually desirable to head-in young trees for two or three years after planting; it makes them stockier. The six scaffold limbs of this tree were headed-in two years ago. Note how the top has thickened

Pruning the Home Orchard—By S. W. Fletcher Cornell University

Photographs by the author

I RECKON I had better go out and trim up my fruit trees to-day. I haven't trimmed them for three years, and they are getting all choked up with wood." So remarked my neighbor from his porch one gusty March morning, surveying the half-dozen trees in his yards with the pride of ownership. I saw him start out with saw and ladder, and with the evident determination of atoning for past neglect by doing a good job. A few hours later I was called out to view his handiwork. He had certainly "trimmed up" the trees literally; and he had done a "good job" without doubt. A third of the top of each tree was on the ground. All the lower limbs had been removed. I



76. Improperly trained. The limbs start too close together. The first big crop will split off some of them. When pruning newly set trees, let the limbs be alternate and not opposite. Be sure to paint the wounds

expostulated. "You have pruned too heavily. Next year you will have a big crop of suckers and less fruit." But my neighbor was satisfied with his job. He had trimmed up the trees. Did not the pile of brush bear witness to the thoroughness of his work?

My neighbor's pruning is like that of many other home orchardists—well meant, but misguided. It is not so much that people do not prune enough, as that their pruning is not wisely directed. Butcher pruning ruins as many trees as the neglect of pruning.

No two trees can be pruned exactly alike, if they are pruned correctly. Pruning is a matter of judgment, not of rule. No man can tell you how you should prune your trees without seeing them; that lies between your own judgment and the condition of the trees. Nevertheless, there are a few principles of pruning which apply everywhere. The home fruit grower, no matter where he lives, who keeps these principles in mind, will not go far astray in his pruning.

The first rule is: Prune regularly and lightly. The average home orchard is neglected for two to four years; then it is pruned too heavily.

The reason why the trees, after severe pruning, make a very vigorous growth of wood and clothe the naked limbs with suckers, is that Nature is trying to restore the balance which the pruner upset. There is normally a balance between the top of the tree and its roots. There is only as much top as there are roots to support it; the top is the expression of the roots. If, then, a tree loses a third of its top by an ice storm or by cut-throat pruning, the roots immediately endeavor to restore the equilibrium by pushing out more top. Hence suckers and water-sprouts.

The important point about this to the home fruit-grower is the fact that when the tree is making such a strenuous effort to regain its normal complement of top, it is likely to be seriously reduced in fruit bearing. Trees

which "run to wood" are not usually fruitful. Many a back yard fruit tree is unproductive for no reason other than spasmodic and very heavy pruning. The practical method, then, is to prune regularly and lightly—a little every year, not a great deal every three or four years. Do not let your desire to do a "good job" turn you into a tree barber. If your trees seem to be growing too fast, the very worst thing you could do is to cut out a lot of that wood every winter—that only aggravates the trouble, and the trees will grow faster than ever. In these cases the excessive growth must be checked by such means as withholding fertilizers, ceasing tillage, summer pruning, and—as a last resort—girdling. But fruit trees do not often grow too fast in the home garden.



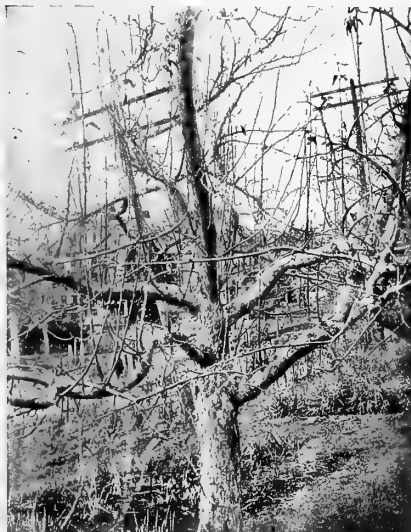
77. How to prune a tree set last spring. Thin out weak shoots; leave several of the strongest, and head these back about a third. This tree was headed-back in March. The picture shows it starting into growth in May

FORMING THE HEAD

Let us begin with a tree set last spring. It was cut back severely when planted, to equalize the loss of roots from transplanting. Now this tree, with one season's growth, has seven to twelve lusty branches started. Select four or five of the strongest to form the framework of the tree. They are the scaffold limbs. No two of these should be nearly



78. This man went out and "trimmed up" his trees after neglecting them for years. The top is in good condition, but he should not have removed so many of the lower branches



79. This apple tree was pruned too heavily last year. Result—a forest of water sprouts. It will take two or three years for it to settle down into bearing again

opposite each other, as this makes a bad crotch which will be likely to split under stress of winds or a heavy crop of fruit or ice. Be very careful about this "forming the head." Head back the framework limbs one-third to one-half and cut out all others close. Head back the branches to make the tree stocky.

THE SECOND, THIRD AND AFTER YEARS

At the end of the second season's growth it will be found that two or three shoots have

arisen from near the end of each of the scaffold limbs. Save one or two of the best of these, avoiding crotches; head them back and cut out the rest.

After the second or third year it is usually best, in my judgment, to cease heading-in, except as a special treatment for shoots growing out of bounds. Thereafter the tree should be allowed to take its natural form, except when it becomes straggling, or lopsided; and the pruning should consist of thinning out entirely, not of heading-in. In some sections peaches and apricots are often, and plums sometimes, headed back annually to advantage. Annual heading-in keeps the peach, which is naturally a straggling grower, in more compact shape; and it also thins the fruit, which is borne only on the new wood. Weak, unthrifty trees may often be rejuvenated by a severe heading-back. With these possible exceptions, I believe that heading-in should usually cease after the trees are three to four years set.

THE PRUNING OF BEARING TREES

How should bearing trees be pruned? First cut out all dead limbs. They are a menace to the living parts as long as they remain on the tree, breeding rots and often parasitic diseases. Never allow dead branches or stubs to stay on a fruit-tree at any time. Second, where branches crowd, cross and interlace, making in summer a dense mass of foliage which the sun cannot penetrate, do a little thinning. Large, highly colored and fine-flavored fruit cannot be produced in a tangle of branches and beneath a curtain of leaves. This is just where the fruit is covered with fungus, also; the germs which cause it cannot grow without moisture, and if the sun has a chance to dry off the foliage and fruit there is sure to be less scabby and rotten fruit. Thin out, but be careful! The most desirable quality in a man who prunes is conservatism. Think twice before taking off any limb. See if you cannot save it by taking off another smaller limb which interferes with it. If a tree is pruned carefully from the time it is set there should be no necessity for cutting off very large limbs when it is old. A careful man goes over his trees, young and old, several times during the growing months, rubbing off and checking shoots which he sees will make trouble later. Husband the energies of your trees by preventing, instead of curing, overcrowding in the top.

In regions where there is liability of serious injury to fruit trees from sun-scalding, the tops are not thinned as much as in more humid sections. It is necessary to keep the fruit trees of the western plains, as Nebraska and of California, much thicker topped than the trees of the Atlantic States.

WHEN TREES ARE PLANTED TOO CLOSELY

The all-too-common mistake of "trimming-up" fruit trees usually arises from the fact that they were planted too closely. Some home orchards look as though they were planted for timber instead of fruit. It is bad

enough to have the trees cramped at the roots and jostled at the top, resulting in a poor yield and a poorer quality; but when the tops begin to crowd many people augment the difficulty by trimming off the lower branches. Just why they do this I could never understand. The result can be seen



80. The pruner has taken off no more limbs than needed to be removed, but he should have removed some this year and more next. A third of the tree on the ground

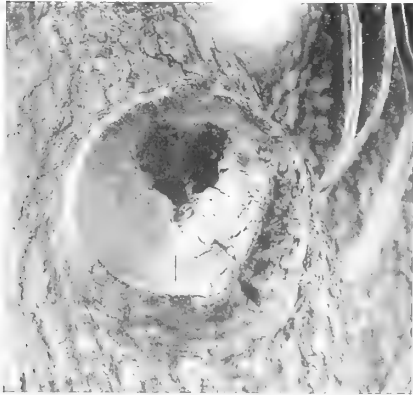


81. Nearly ruined. More than half the limbs on the ground. For two or three years now it will produce a big crop of suckers. Prune annually and moderately, not biennially and heavily



82. A brush pile in the air! The lower limbs interfere with cultivation, and bear inferior fruit because there is more moisture and less sunshine there. Thin the top gradually; take off the lower limbs, but not all at once

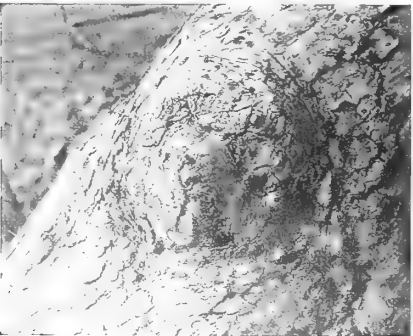
everywhere—orchards of “leggy” trees, their bearing surface reduced to a mere tuft of branches thirty feet from the ground. The owner trimmed them up, so they would



83. The rotten hole goes into the heart of the tree. It would not have rotted if the wound had been painted. There is no way of saving the tree now



84. Never leave a stub. The tree is rotten hearted now. The next high wind will blow it down. All of this could have been easily prevented



85. Every wound can be healed as perfectly as this. A limb five inches thick was removed five years ago. We can assist nature by keeping out the rot while the healing process is going on. Paint does this

have more room! The very best style of pruning for such orchards, if the trees are not more than twenty to twenty-five years old and are still healthy, is to cut out at least

every other tree. This will give the remainder a chance to spread. There is more surface for bearing fruit on one symmetrical, well-rounded-out tree, shaped like an inverted bushel basket, than on three trees of the telegraph pole kind which one sees in many home orchards. Don't squeeze trees in the orchard like pines in a forest. Give them a chance to spread out, root and branch, and so do their best.

THE TIME OF YEAR TO PRUNE

What time of the year shall I prune? Again I should be glad to take refuge in generalities. Of course, there is no one best time for pruning. The old saw, “Prune when your knife is sharp,” is good advice so far as it goes, provided the man only cuts out suckers and wayward or superfluous shoots as they appear. The man who takes pride in the appearance of his fruit garden will nip here and check there all the growing season. But the main pruning should be done when the tree is dormant. Pruning is amputation. No matter how considerably done, it is always a shock to the tree. The shock is much less, generally, if the operation is performed when the vital energies of the tree are quiescent. Pruning can be done at any time between the fall of the leaves and the bursting of the buds, but it is usually best to wait until early spring—February or March, in most sections—because then the wound soon begins to heal. If pruning is done in early winter, the remaining limbs are more likely to winter-kill, especially with peaches and plums; and, moreover, the cut surfaces evaporate much moisture from the tree, reducing its vitality and making it more liable to winter injury. Just before the sap rises is the ideal time to prune in most cases.

WHERE SUMMER PRUNING IS ALLOWABLE

Summer pruning is advantageous only when trees are growing over-vigorously, to the detriment of their fruitfulness. Summer pruning is one of the best ways of checking this undue growth if the cessation of tillage and withholding of fertilizers fail to do it. Young trees on very rich soil, which are late in coming into bearing, may sometimes be thrown into bearing by summer pruning. Keeping in mind the principle, “Checking growth induces fruitfulness,” and remembering that summer pruning does check growth severely, since it removes a large number of those plant kitchens—the leaves. The home orchardist can decide if his trees need this special treatment. Summer pruning is a special treatment for special cases. Spring pruning is generally best for the majority of trees, which have not made an unusually heavy growth.

DON'T LEAVE LONG STUBS:

Be careful—be very careful how you make the cuts. A few weeks ago I examined twenty-eight small home orchards from fifteen to twenty-five years old. Of the 940 trees which were originally set in these orchards, 328 are now gone, and twenty-eight more are blown down, split open—rotten-



86. On left, two large limbs removed, showing growth of callus in one year when cut is made in the proper place and when wound is painted. On right, wound all healed



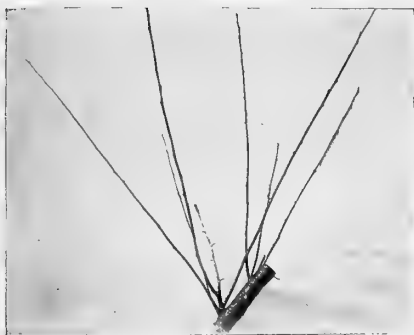
87. We can help a wound to heal when the callus begins to harden by slitting it with a knife on the inside, in March. This lets the callus grow. When it covers the wound, germs of fungi can not longer enter



88. Where to make the cut. Sawed close to main current of sap which is to cover the wound. A long stub is out of the current. Careful men pare the wound left by the saw with a sharp knife and paint the scar to keep out germs



89. How to make the cut. Leave no stub. Saw close, just beyond the bulge where the limb joins the trunk, and parallel with the trunk—not at right angles to the limb being sawed off, as most people will tell you. Figure 88 shows why



90. Suckers or water sprouts, the result of too heavy pruning. To avoid them, prune lightly every year and rub off those that come as soon as they appear. They sap the vitality of the tree and seldom become the best bearing branches



91. Pruning tools. The inside shears are better. You will need both styles of saws; the thin one reaches limbs that cannot be sawed off conveniently with the other. The pruning-back, for raspberries and blackberries, is made out of an old file. The long-handled tree-pruner is for heading-in tall trees and removing small, high branches

hearted. This loss of 30 per cent. is not greater, I believe, than the average loss in home orchards of that age the country over. What is the cause? Carelessness. Some of those missing trees the borers fattened in; some the mice girdled; some the plow barked; some the sod killed; but I am convinced from my examination of the remainder that two-thirds of them died from the effects of careless pruning. Where limbs had been removed in past years, I found stubs from three to twelve inches long. The idea was to keep the rot, which would start at the cut end, away from the tree! Then the long stubs make such convenient places for hanging baskets and climbing around the tree! The results may be seen in thousands of orchards the country over. The wounds do not heal and the rot does get in, and work down into the trunk. Some windy day the owner finds one of his trees blown down—rotten-hearted!

HOW TO MAKE A WOUND HEAL

Long stubs never heal well. They are out of the way of the flow of sap which contains the healing material. Nothing can draw this up to the wound except leaves, and the stubs have no leaves, unless suckers appear. Saw close. We want to cover that wound with healing tissue—the "callus"—

just as soon as possible. As long as it remains open it is a menace to the tree. We can help Nature by using a sharp saw—ragged wounds heal slowly; and by covering the wound with some aseptic material while it is healing. Shellac, coal tar and grafting wax are sometimes used, but paint is best. White lead is much better than ochre for this purpose. Make it thick, so it will not run, and brush it thoroughly into the wood. The paint does not help the wound to heal directly, but it keeps the wood sound while the wound is healing, and prevents the evaporation of moisture from the tree. All wounds more than an inch and a half wide should be painted—you cannot afford to neglect it. Old wounds not yet completely healed over should be repainted. All body wounds, as wintersplits, borer injuries and team injuries, should be treated the same way.

BURN THE PRUNINGS

All prunings should be burned at once and the ashes returned to the orchard soil. Do not let them accumulate from year to year in some corner. They may harbor pests.

IS PRUNING UNNATURAL?

After a man has done a conscientious job of pruning, it is more than likely that his neighbor, who does not prune and whose fruit shows it, will lean over the fence and remark, "Don't you know that pruning is unnatural? Nature doesn't prune, why should man? We can't improve on Nature. Her way is always best."

If you care to retort, ask him if he is satisfied with Nature's apples, pears, plums—the sour, seedy and diminutive fruits of the thickets. Tell him that Nature is after as many seeds as she can get, to reproduce the species. She is not concerned so much about the size, juiciness and flavor of the pulp surrounding these seeds. But man is; and since he seeks for a product that is unnatural in one sense, and since this can be done only by unnatural methods, it will



92. Winter injury to the trunk of a sweet cherry tree. Cut off the rough and decayed portions to the quick, scrape the wound and paint it with white lead



93. Don't let branches lie on one another. This peach limb crossed another in a tree not sufficiently pruned. The abrasion weakens the part of the limb beyond by cutting off part of the food supply and offers a chance for diseases

pay him to prune. How skilful some men are at inventing excuses for their laziness!

Buy a pair of pruning shears! You will find that pruning is one of the most fascinating operations in horticulture, because it brings the man into the closest touch and sympathy with his plants. Nothing can exceed the delight of finding plants plastic in your hands, and fashioning them at will.

COMMON-SENSE RULES

The gist of my advice, then, is this:

Prune regularly, not spasmodically.

Study your trees—each one is a new problem in pruning.

Head-in young trees, thin out old trees.

Prune in early spring.

Prune close; don't leave stubs.

Paint all large wounds.

Who Can Afford to Garden Without a Roller?

GARDENING without a roller is either a dusty or else a muddy job, according to the weather, so far as the paths are concerned. Our paths are so smooth in wet weather and so hard in dry weather that our gardening is comparatively clean work. We lay out our garden on paper in the winter and decide just where the paths are to go. As soon as the ground dries and has been dug and raked, we roll our paths until they are fairly hard—perhaps going over them three or four times. This is done before the soil has been made uneven by trampling. After that, about all the care they need is an occasional rolling, and weeding with a push hoe.

When a broad or double row of seed is planted of sufficient length to pay for the trouble, we run the roller over it instead of pounding with the hoe or tramping. Amateur gardeners seldom realize how important is this making the soil firm after planting seed in dry weather. It insures germination, and is of benefit to the young plant later on. A "crust" can always be prevented by running a rake lightly over the surface.

A roller should be run over the lawn every spring to smooth down the unevenness caused by freezing and thawing. Its frequent use on the lawn also discourages moles. Tennis courts, driveways, and walks all are benefited by the use of the roller.

The water-ballast roller is a wonderful new invention. The weight can be made anything you please, within certain wide limits. It is often convenient to reduce the weight.

A Victorious Campaign Against the Insects—By E. L. Fullerton Long Island

SPRAYING OUTFITS FOR HOME GARDENS—WHOLESALE METHODS OF DESTROYING INSECTS—THE RASCALS THAT NEED SPECIAL TREATMENT—FORMULAS FOR THE STANDARD INSECTICIDES AND FUNGICIDES

Photographs by the author

HOW a plant can survive nowadays is a mystery, for almost every one has some special enemy or enemies; in fact, their name is legion. There are biters, borers, suckers and cutters; there are mildew, rust, blight and scab. While there are wholesale methods of destroying most of them, there are about two dozen "critters" that have to be known by sight and fought by special



94. Tobacco for certain sucking insects. Powdered and blown on stems or steeped and sprayed

methods. All insects may be divided into two classes, the biters and the suckers. The way to get rid of the pests that bite and chew is to poison their food, but the fellows that suck the juices and pay no attention whatever to poison on the outside surface of a plant have to be met and slain in open battle.

HOW TO SEND THE FLEA-BEETLE FLYING.

In the spring, the very first chance we get, we sow lettuce and radish seed, and then "sit up nights" to see the seedlings appear. Oh, joy! the ground is cracking, and, joy again, the tiny seed-leaves appear. Aren't they strong and lusty? Did we ever have any quite so promising before? Surely nothing can happen to them; we made their bed so soft and deep and gave them so much to eat. Then "woe is me," some morning we go out to look at them before breakfast and they are lacework—just riddled with tiny holes as though the fairies had been having target-practice or a *schutzen-fest* during the night. We look closely, and find tiny black creatures all over them; a touch on the leaves and they jump away—the black flea-beetle has arrived. What shall we do? "Poison the leaves," they say, but I hate to do it. I am always afraid the leaves might not be thoroughly washed before they are served at the table. Still it must be done. There are two things that the experts tell us to do to rid the plant of them—spray with Bordeaux mixture, or dust with powdered tobacco. Some there are who compound a decoction of both. Last year I dusted our plants with fine coal ashes in the early morning when the dew was on the leaves, and sent these creatures flying. Dusting with air-slacked lime,

land plaster or Paris green and flour are other methods used successfully.

ROUTING THE POTATO BEETLE

Then there is the potato bug—also called the Colorado beetle—(I wish they would keep her home). Every one knows and loathes her. She is soft when she is new, and hard when she is old; she chews the leaves, therefore she must be poisoned. Use Paris green or an arsenical poison, but if you have little ones who might possibly taste this "sugar," as the small mind might conceive it, pick the bugs by hand, and there will be no danger. If you don't want to touch these creatures, and I don't know any one who particularly craves the task, take a can of kerosene in the left hand, place it under the bug, and push her into it with a stick, a shingle, or a stiff flat paint brush. In this illuminating oil she quickly expires.

You can do the same thing with the squash bug and striped beetle that love melons and cucumbers, only they must be killed outright, and are if you use a poison. Kerosene emulsion and whale-oil soap, however, are the best things to stop them in their mad career. Neither of these is poisonous, so you can use them without fear of harm, to investigating wee ones.

DO YOU KNOW THE CUTWORM?

Do you know how it feels to go into the garden of a bright summer's morning and find a lot of your plants lying prone on the ground? Mr. Cutworm came around last night. He must think he is Father Time with his scythe looking for some mowing to do. He is a coward, for he works out of sight just under the surface, not in the open, and only at night at that, when good, God-fearing folk are asleep in their beds. If you dig around the roots of the plant you may find him and you may not; if you do discover him, just remember that he is a brownish fellow, with stripes or bands, and is rather fat for his length of one and one-fourth to one and three-fourths inches, and he has a neat little pair of pruning-shears attached to his head. If you don't find him, put poison bait about near the stems of the plants. Dip some clover into Paris green and water, or make a dough of Paris green and bran and sprinkle that around. Mr. Cutworm's mother is a night-flying moth (you see, the entire family belong to a disreputable gang and keep late hours), and she may be caught by placing a lighted torch or lantern on a brick in the center of a tub of water which has kerosene floating on the surface. Her ladyship is attracted by the light (perhaps she wants to see whether her bonnet is on straight or whether her gown is becoming), and flies straight into the light, becomes stunned, falls into the tub, and finds a watery (or oily) grave. The old-fashioned way to catch this gentleman (her ladyship's son)

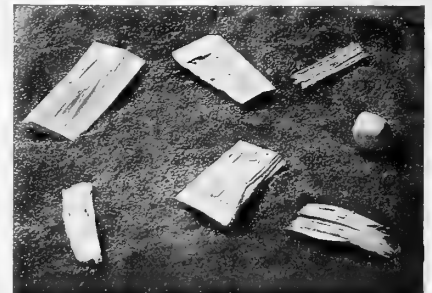
was to put stones or chips near the young plants and lift them in the early morning. He is accustomed to hide away in just such places to take his daytime sleep. I needn't tell you what to do when you find him.

ENEMIES OF SQUASH AND OTHER VINES

There is a little fellow striped with yellow and black (I don't know whether he is partial to Princeton or not) that dotes on squashes, cucumbers and melons when the vines are young and tender. He eats both foliage and stems. Spray the vines with Paris green and water, or dust with Paris green mixed with flour, road dust or land plaster. The plants may be protected by a mosquito-netting tent, but I think few of us would go to the trouble of constructing tents unless we were extremely fond of those particular vegetables which attract this annoying creature.

The squash-vine borer is a sly fellow. He creeps inside the stems of melon, cucumber and squash vines and eats the heart out of them. If your vines wither and die as a result of their feasting, the best thing to do is to burn the vines at once. This heads off next year's crop of borers. If you catch the vines just beginning to wither, cut out the borer, who is whitish and about one inch long, and has a brown head. After destroying the enemy cover several joints of the vine with earth so that new roots will form at these points. This gives the plant a better chance to recover.

When I say "squash bug," don't you say "Ugh!" I doubt if she has any friends. The yellow eggs are laid on the under side of the leaves. The youngsters are called nymphs and they suck the sap of the leaves, often causing the entire plant to wilt. This chap when grown up wears a rusty black coat, with a yellow vest, and he doesn't smell good if you touch him. They say hand-picking morning and evening, when the bugs are drowsy, is the best remedy. Or you can place boards on the ground around the plant and many of them will be found underneath in the morning. I leave the squash bugs to the other member of our gardening com-



95. Put chips or stones near the plants. Cutworms will hide under them in the night, and can easily be exterminated early in the morning

mittee, and I believe he crushes the bugs in a fold of the leaf.

ENEMIES OF THE CABBAGE FAMILY

Have you ever noticed in August the sudden appearance of swarms of white butterflies? Have you ever driven through a farming district and noticed the roads full of them? Sometimes they are so numerous that it seems as though they could not fly away before the horses' hoofs and the carriage wheels have crushed them. Last August I saw such a sight. There were tall hedge-rows on either side of the road, but no one needed to tell me what was behind those hedge-rows. The butterflies announced that, and soon an opening showed me the cabbages and cauliflower—acres of them. It is too bad that these pretty white creatures should have such troublesome children. Really, they are enough to drive one insane. You know them, too, if you have ever had cabbage, cauliflower, kale or the like in your garden—little green soft creepers, voracious children that grow into big green soft creepers by eating great holes in the vegetable leaves. These are imported creatures, and I wish they, too, had stayed home. Our own worm is bluish with yellow stripes, though the butterflies can scarcely be distinguished from one another.

One pound of fresh pyrethrum powder, which has been mixed with five pounds of flour, put into a tight vessel or tin box and kept for twenty-four hours, then dusted into the leaves at nightfall, may discourage these creepers. The other poison powders previously described may also be used, and I have heard of sprinkling salt on the leaves, which is said to cause the worm to "melt away" when it touches him, but I have never tried this. I fear there would be damage to plants unless extraordinary care were taken. There is one thing, however, which will settle these crawlers, and their cousins the loopers also. That is the resin-lime mixture combined with Paris green and Bordeaux. The cabbage (also cauliflower and Brussels sprouts) should be sprayed thoroughly with this twice, once before the white butterflies appear, and again in three weeks or so, being careful, however, *not* to spray cauliflower after the flower has set.

The cabbage plusia is as fond of that vegetable as our friends from Deutschland. His mother is a dark-gray moth with a silver mark on each wing (not sterling), and he is pale-green, translucent, with paler stripes from head to tail and more like the measuring worm. He goes right into the heart of things and can riddle a head of cabbage thoroughly in short order.

The poor cabbage goes lame, gets the club root (a swelling of the root), and succumbs to it in a short while. Cauliflower, turnips, and other members of the cabbage family also have this peculiarly named disease, and when it appears, the only thing to do is to cease growing them and buy these vegetables for two years or more, until the germ has been starved out of the soil.

If the onions turn yellow, you may know the maggot is at their roots. Spray the

lower stem and the soil with kerosene emulsion. If this fails, you would better pull the injured plants and burn them. These creatures, which are the larvæ of a brown fly, also infest cabbage and cauliflower, and the same remedy may be applied.

PLANT LICE AND OTHER SUCKERS

Plant lice or aphides also come to cabbages. They have a sort of purplish tinge and make great clusters on the stems and young leaves. They also visit cauliflower and turnips. Kerosene emulsion is good (or bad) for them, or tobacco tea made by boiling one pound of tobacco leaves in two gallons of water for a short half-hour and spraying it on the plant when cold.

The chinch bug and tassel worm do get into the corn once in a while, but don't trouble us very much. Kerosene emulsion "fixes" the former, which, when full grown and beyond the harmful stage, is a tiny sucking creature with white wings with two black spots on them. The latter must be picked by hand.

AN ENEMY OF THE CARROT FAMILY

You remember the black butterfly with yellow and blue spots on her wings? She is a beauty, and her children are likewise handsome—green caterpillars with yellow spots. They are fond of celery, parsley and the like, but as they are not very numerous they can be exterminated by hand.

THE VILLAINOUS WHITE GRUBS

Do you remember the May beetles, or "June bugs," as we used to call them, that flew into the school-room in the evening during study hour at boarding-school? And how scared some of the girls used to get for fear one would light on them or get in their hair? They are funny creatures, always bumping their heads against the ceiling and doing idiotic things generally. Their young are grubs which feed on the roots of plants. They generally come in grass land, and moles are very fond of them, so we let Mr. Mole live, though we do hate his modern method of "subway" travel. If these grubs get very bad, trap the moths with the torch in the kerosene and water tub.

SMUT, RUST AND OTHER FUNGI

These are the "critters" that most disturb our garden peace. But there are others, especially the fungi, which are themselves plants that live on plants. Corn smut is one of these parasites. It is a fungus that grows very rapidly and may attack any part of the plant's system, causing a swelling whose silver-white coating conceals a peculiar black mass filled with fibers. As I said before, burn it, stamp on it, anything to destroy it at once, before it sows its spores to be reaped again in increasing quantity in the same crop the following year. There is no known "medicine" for it.

Bean rust comes in damp weather. It makes a rusty spot on the pods and leaves and can be controlled, if not obliterated, by using Bordeaux mixture, but I should be afraid the beans might retain a little of it



96. Buy fresh hellebore and dust the powder on the currant bushes or apply it with a bellows



97. Paris green for chewing insects. Used as a powder or mixed in liquids and sprayed



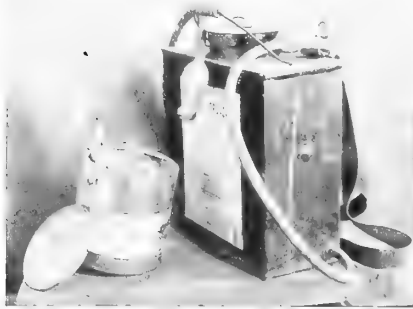
98. Various types of spraying apparatus, including a dollar squirt-gun of tin and a knapsack sprayer



99. Kerosene emulsion, hard to make and nasty for folks, and plant lice or other sucking insects



100. Whale-oil soap. Bad for scale insects. Good for currants and gooseberries. A vile smeller



101. Bordeaux mixture, the standard fungicide. Small cans of paste. Mix with water, and spray



102. An inviting shingle. Its shadowy coolness attracts various crawlers. "Reconcentrado" the worms!



103. Luring night-flying moths to destruction. One of them is the mother of the cut-worm

when prepared for the table. Its long name is anthracnose, and it is not at all a pleasant visitor.

SPRAYING OUTFITS FOR HOME GARDENS

There are various outfits for spraying arsenical and other insecticides. The kind you need depends upon the size of your garden. If it is large you will probably need a barrel on wheels. Of these there are numerous styles. If the garden be small, one of the hand-sprayers is sufficient. The knapsack is a good one. The tank is carried on the back by straps over the shoulders, and a nozzle or rose spray is held in each hand. It throws a spray about fifteen feet, and it is therefore equally useful for both vegetables and young fruit trees.

The powders may be blown on a plant by means of various kinds of bellows and rubber balls, or by placing the powder in a coarse muslin or cheesecloth bag and dusting or shaking it over the plant. Many other simple and inexpensive methods will occur to the reader.

THE TROUBLESOME POTATO PROBLEM

The poor potato has a "hard road to travel." It not only has the Colorado beetle, but scab and blight as well. The scab is a fungus disease of the tuber, and this fungus may be either on the potato or in the land, or both. There are three ways of treating seed potatoes for scab before they are planted. Soak them in a solution of corrosive sublimate or a solution of formalin, or expose them to the light for several weeks before planting. The corrosive-sublimate solution is made thus: Two ounces of the powder are dissolved in two gallons of hot water. When dissolved, pour into a barrel that already has thirteen gallons of clean water in it. Let it stand for several hours, stirring once in a while, then put the seed potatoes either cut or whole into this solution and let them remain an hour and a half. Corrosive sublimate is a deadly poison, and potatoes treated in this manner should never be fed to animals. I think I "pass" on this method. Eight ounces of formalin in fifteen gallons of water is the proportion for this germicide. The seed should be soaked in the solution for two hours, placing the seed in a bag and suspending the bag in the barrel. A crop from seed treated in this manner is not poisonous. It seems to me good, pure sunlight is the best method, and authorities differ greatly on effects obtained by chemical treatment.

The blight affects the leaves and stems of the plant and may even affect the tuber itself. It looks like white mildew and should be prevented, as it cannot be checked when it once has a good foothold on the vines. Bordeaux mixture thoroughly sprayed on before this disease appears will often prevent its coming at all.

DISEASES OF BEETS

Beets have scab like potatoes, but they cannot, of course, be treated in the same manner as the potato. If you have scabby potatoes be sure *not* to plant beets in the same place.

AN ASTONISHING INSECTICIDE—CARBON BISULPHIDE

If you do not mind evil odors, there is a remarkable insecticide known as carbon bisulphide, which will kill the maggot. It is made by passing sulphur fumes over red-hot charcoal and liquefying the vapors by condensation. It is a clear-white liquid, heavier than water, which evaporates very quickly and is inflammable. It does not harm the skin or fabrics (I mean the chemically pure product), but the fumes do kill all insect, plant, and human life, if inhaled freely. It is particularly valuable to the gardener in destroying harmful insect life that is in the earth, where the ordinary remedies are useless. The vapor is heavier than air and naturally falls; therefore, if injected into the soil where the unwelcome insect lives, the fumes will work their way between the particles of soil, killing all insect life that they encounter. It is necessary to know just how much will kill the insect and not kill the plant, however. And it is extremely necessary to handle this chemical carefully and as described later. For the amateur gardener it is most useful in destroying cabbage maggot, also an insect that attacks the roots of grape vines as well as borers that enter fruit trees. It can be bought of druggists or direct from the manufacturers in air-tight cans or drums for about 25 cents a pound.

In treating plants for root maggot, a hole should be made three or four inches from the stem of the plant, and running obliquely down below the root. The liquid is poured into this and the hole immediately closed, press the earth firmly so that the vapors may not escape. One teaspoonful is enough for a small plant; one tablespoonful for a large plant. The earth should not be in too loose a condition, else the fumes will escape; nor in too compact a condition, else the vapors set free cannot distribute themselves throughout the ground. It is wise to start this treatment for the maggot as soon as the insect is discovered, or he will make such headway that the crop will be lost.

There are injectors made for the special use of carbon bisulphide. A hole could be made with a sharpened stick, the liquid poured in from a tea- or table-spoon and the hole immediately closed. A small amount of this liquid poured into a mole's run will be almost sure to finish him; but as moles eat many underground insects, they are rather beneficial than otherwise, unless they make a run under a row of plants or ruin a sand-papered lawn.

Carbon bisulphide may be used to kill sucking insects upon plants such as plant lice in this wise: Take a fairly good-sized, well-made wooden box. Make an auger-hole in the bottom. Place over the hole a wad of cotton large enough to absorb a tablespoonful of liquid. Turn the bottom up and fit a cork into the hole. Now place the box over the plant or vine affected, making sure every part of the plant is inside the box, which should set firmly into the earth. Remove the cork, pour on the cotton two teaspoonsful of carbon bisulphide, replace

the cork and leave the box in position for three-quarters of an hour. I believe this easier than spraying with an insecticide. The odor soon departs, though while it lasts it is terrific, and there is no trace of the chemical left. Weevils in grain and other seeds are killed in the same manner, a small amount of carbon bisulphide being poured over the seed, which is in a closed receptacle, the insect being entirely destroyed, while the seed is absolutely uninjured. Bulletin No. 145 of the United States Department of Agriculture is a most interesting pamphlet on this extremely vile-smelling but valuable insecticide. It may be secured for the asking.

HOW TO MIX PARIS GREEN

(The standard arsenical poison, a wholesale way of killing insects that chew.)

Paris green and London purple are the two principal poisons used for chewing insects. To make a spraying solution, mix one pound of Paris green with 100 or more gallons of water; one pound of milk of lime prevents injury to leaves, and the latter should always be used when making the London purple solution, which is compounded in the same proportion as Paris green. To use them dry or in powder form, take one pound of either poison and mix with fifty pounds of flour or 100 pounds of land plaster, fine road dust or coal ashes. This can be dusted on the leaves through a coarse muslin bag or through a fine sieve. The London purple solution is the cheaper of the two and adheres to the foliage longer. Tobacco dust sprayed or blown onto the leaves and stems is also a remedy.

HOW TO MAKE KEROSENE EMULSION

(The standard remedy for plant lice and some other sucking insects.)

Kerosene emulsion is made by dissolving half a pound of soap, and adding two gallons kerosene while hot; this must be churned hard until the two ingredients are thoroughly mixed, when it becomes a creamy paste. This must be diluted with twenty to twenty-five parts of water before it is sprayed on the stems and foliage of a plant. You can use one gallon of sour milk in place of the half pound of soap, and dilute in the same proportion before using.

THE RESIN-LIME WASH

The concentrated solution is made in this way for use against the cabbage worm: Five pounds of pulverized resin; one pound of concentrated lye; one pint of fish oil; five gallons of water.

The oil, resin and one gallon of hot water should be placed in a kettle and heated until the resin is soft. Then add, very carefully, the solution of concentrated lye (directions for making this solution will be found on the can). Next add the rest of the water (four gallons), and boil until a few drops in some cold water produce a clear, amber-colored mixture. If there are not five gallons of the mixture when boiling is finished, add enough water to make that amount. Take this concentrated stock or solution and to one gallon

of it add sixteen gallons of water, three gallons of milk of lime or whitewash, one-fourth of a pound of Paris green. This mixture should only be made as needed, as after the lime and Paris green are added it becomes cloudy and gummy, clogging the sprayer.

BORDEAUX MIXTURE, THE STANDARD FUNGICIDE

Copper sulphate is the most practical destroyer of plant diseases known, but if used alone it burns the foliage and therefore it has to be mixed with lime, which also makes it stick, so that a light rain does not wash it away. This combination of copper sulphate and lime is the Bordeaux mixture. If you have a large enough place to justify

a barrel pump you should make your own Bordeaux mixture, but I don't bother with it. I buy it ready mixed and dilute it to various degrees for different kinds of plants. The directions come with the mixture.

AN IMPROVEMENT ON THE "GOOD OLD WAY"

Hand picking is the only thing for some of the meanest "critters" of them all. You may sniff and talk haughtily of "scientific methods," but sooner or later your pride will take a fall and you will humbly take your stick and pail of kerosene and make the rounds. Direct contact is unspeakable, and quite unnecessary. Use the pail or fold them gently but firmly in a near-by leaf.

Resolved: That we beat the insects this year and have the best vegetables ever known!



104. The knapsack sprayer in action. It weighs a ton after you have worked an hour in the hot sun, but it throws a spray fifteen feet high and is therefore useful for spraying trees as well as bushes and vegetables

Twelve Suggestive



105. Privacy is the key-note of this garden. Its high fence is covered with vines. Note the central lawn and side planting



106. A garden for "floral effect." A thousand Shirley poppies could be cut any day for two weeks, but they are left for garden decoration



107. A garden of perennials. Not a typical border, because it is straight, but admirable for the location. Notice the excellent background for the flowers



108. A wild garden in a Massachusetts town. Glorified in autumn by great colonies of asters, goldenrod and white snakeroot (*Eupatorium ageratoides*)



109. The simplest garden. Just a row of hollyhocks against a wall. The kind of thing we all admire but are never smart enough to think of

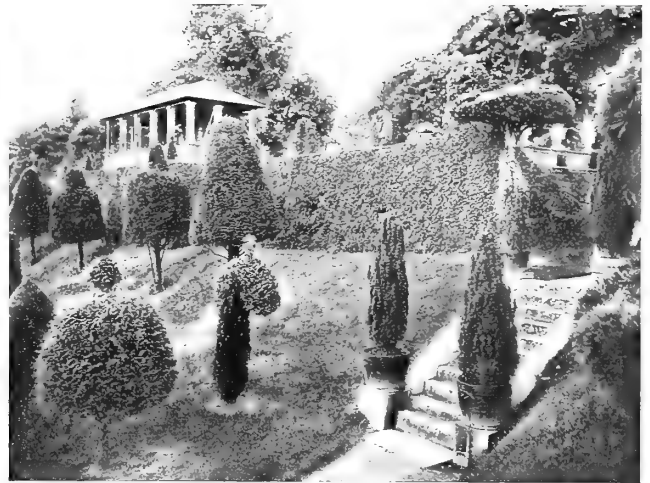


110. A little water garden, where the lusty water hyacinth tussles with the lotus, while the variegated calamus looks on (Missouri Botanical Garden)

Home Gardens



111. A combination garden of vegetables and flowers. Such a garden is unrivaled for interest when successfully worked out. It is for the connoisseur



112. An evergreen formal garden. Such a garden lacks the color, variety and gaiety that flowers give, but it is stately, permanent, and relatively economical



113. A formal garden in which flowers are more prominent than architecture, sculpture or evergreens. Perennial phlox at the right, China asters at the left



114. A passageway garden. Showing how service paths and out-of-the-way parts can be beautified by planting a few strong-growing plants



115. A modest fruit garden, showing the simplest possible pergola. It may not cost a thousand dollars, but it spreads out the grapes to the sun



116. A back-yard garden. This enormously productive garden, occupying two city lots, has received twenty cartloads of manure yearly for twenty years



Gaining a Whole Month

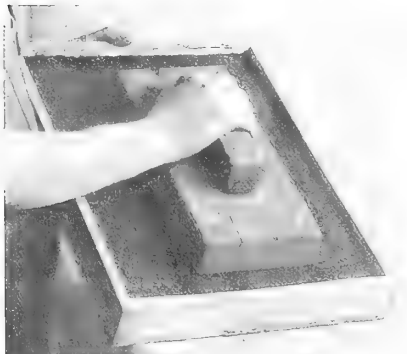
MARCH is the great month for starting flower seeds indoors in order to gain three or four weeks on the season. All the popular annuals should be started now. No greenhouses are necessary, not even a hot-bed or coldframe, though the best results come from such. Earliness alone would



117. Bore holes in the bottom of the flat for drainage. Partly cover the holes with large concave pieces of crock



118. Put in the bottom the lumps and rough stuff that does not pass through the screen



119. Smooth the earth both before and after sowing the seeds. Especially important for fine seeds

hardly be worth striving for, if a plant bloomed for a definite period, say four weeks, because what you would gain at one end would be lost at the other. But in many cases, especially verbenas and petunias, a month earlier means a clear gain of thirty days, for the same plants, with good management, will continue to bloom until frost.

PLANTING THE SEEDS

Get or make some shallow boxes three inches or more deep and small enough to lift easily. For drainage, bore holes in the box and put a layer of coarse material in the bottom. Sifted soil which has been made rich with old manure will give the best results. Sprinkle in rows an inch or two apart and the seeds a depth which will be about four times their diameter. Put large ones in about half an inch and very fine ones hardly more than below the surface. After planting, press the surface with a piece of board, moisten the soil with a bulb sprayer, without washing the seed out. This keeps them from drying out.

TRANSPLANTING SEEDLINGS INDOORS

When the seedlings are large enough to be transplanted, put them into a basin of slightly warm water while waiting for their turn to be set in their new quarters. Keep in a shaded place for a few days; a bright sun would cause them to wilt if they are exposed to it before the roots have taken fresh hold of the soil.

HOME-MADE TRANSPLANTING DEVICES

There are many things which will make satisfactory receptacles for transplanted seedlings. For special kinds or single plants it will pay to have a supply of two-inch pots, but for ordinary purposes a less expensive method will be just as good. Common grape baskets, the kind that are made in one piece, do very well for about a dozen seedlings. Tin cracker-boxes are used also; some measuring six by eighteen inches and two inches or more deep were painted to prevent rust, and have been in use many years. Of course, "flats" and florists seed-pans are as useful for transplanting as for the original seed. Card-board cracker-boxes make very good temporary seedling holders. The regular size will accommodate a half-dozen or more, and cut in two and stood on end they are useful for single plants. Egg shells, gourds and cocoanut shells are all used for this purpose, but are not so economical of space as more compactly shaped receptacles. When transplanting, allow as much space as you can afford. If the young plants are set too near together their roots will intertwine and it will be difficult to prevent breaking them when transplanting to open ground later on.

OTHER GOOD SUGGESTIONS

It is very important that the seedlings should not become spindly. To prevent this, keep them in strong light or sunshine; do not give them too much manure in the soil; turn the boxes occasionally, so that one side is not always next the window, and do not allow the room to become too heated.

Some markers for the seeds will be found indispensable. The tops of grape baskets

furnish good home-made labels, as they may be split into any width desired and the smooth surface is very handy for writing the names and dates.

An old fork will be useful to work the soil around the seedlings. A piece of table oil-cloth to spread on the floor, when working in the window garden, will be a good protection for the carpet and an easily removed receptacle for any water or litter which may drop to the floor.

House-grown seedlings are much better for being hardened before transplanting in the open garden. Put them outdoors in a sheltered place on pleasant days so they will become gradually accustomed to outside conditions.

New York.

ALBERT R. MASON.



120. Sow the seeds carefully and evenly. It pays to take time and do it well



121. Sift loam lightly over the seeds. This is the way to get a light, even covering



122. A thrifty lot of young seedlings all ready to transplant to another box where they will have more room



Alpine and Iceland Poppies

ALMOST every old-fashioned garden has Iceland poppies in it, but only a connoisseur in floriculture knows the true Alpine poppy. The botanists consider the Alpine poppy as merely a variety of the Iceland poppy, but for horticultural purposes it is important that they should be regarded as separate species. While it is true that both types can be secured in the same range of colors, the Arctic species is typically a yellow flower, while that of the European Alps is typically a white flower; and, moreover, there is a radical difference in methods of cultivation. The Iceland poppy is easy to grow in the ordinary border or garden, while the Alpine poppy must have rock-garden treatment, and therefore its usefulness is much more limited. If we exclude the California poppy, which does not belong to the same genus as the common or opium poppy, the most splendid yellow flowers of the poppy genus are to be found in the Iceland species. While it is down in the books as a perennial species, it is a rather short-lived perennial, and is commonly treated as an annual, or rather the seed is sown every second year. Often, in localities where the Iceland poppy is fairly permanent, it will pay to sow seeds every year or two, because more and better flowers are secured in this way. Many people complain that the common or opium poppies are useless for cut flowers because they shed their petals so quickly. This objection cannot be made to the Iceland poppy, especially if the young flowers are selected and cut in the early morning, a principle which applies to many flowers that are not ordinarily considered to be available for decoration. If the flowers are cut regularly and promptly, so that no seed capsules are allowed to form, this species will remain in bloom from May to October. The Iceland poppy will bloom the first year from seed if started indoors during March.

The beautiful Alpine poppies pictured on this page are probably the first examples of this species to be photographically illustrated in America. They grew last year in the famous rock-gardens of Mrs. H. L. Higginson, at Manchester-by-the-Sea, Mass. What inducement is there to grow Alpine poppies, particularly as the flowers are somewhat smaller than those of the Iceland poppy? The answer is that the Alpine poppy belongs to the dainty and delicate type of beauty, whereas the Iceland poppy is of the strong and bold type. The Iceland poppy is espe-

cially good for vivid masses of yellow and orange, while the Alpine poppy is chiefly to be admired for its white and pink forms. The color range in both species includes the above-mentioned shades as well as pale yellow and a bright rose verging upon red, but never deepening to the intense blood-red of the corn poppy of Europe.

While the Alpine poppy can hardly be expected to succeed in a border, it is an easy subject for the rock garden. So far as we know, it does better in a rather poor soil, and of course it must have excellent drainage. All Alpine plants require perfect drainage, and that is what a rockery is for. Both the Alpine and Iceland poppies ought to have full exposure to the sun.

Botanically, the poppy of the European Alps (*Papaver alpinum*) is generally regarded as an extreme form of the Iceland poppy (*Papaver nudicaule*), being differentiated by

its dwarfer habit and more finely divided foliage. In one of the pocket guides to the wild flowers of the Alps there is a colored print of the Alpine poppy showing a white flower. The author (Correvon) states that there is also a yellow-flowered variety which is found on the granitic Alps, from which it seems a fair inference that the white flower ranges over the limestone or calcareous Alps.

Since it is impossible to draw a color-line between the varieties of the two species (*P. nudicaule* and *alpinum*), the following distinctions are given. The Iceland poppy is a more robust plant, with the divisions of the leaves entire or sparingly cleft, while those of the Alpine poppy are cut into many fine and narrow secondary divisions. The seed pods or capsules of the Iceland poppies are short, thick and roundish, while those of the Alpine are longer and narrower and more nearly club-shaped. W. M.



123. Alpine poppies. They are white, pale red, orange, pink or salmon



Better Fruit and Vegetable Cellars

A HOME that does not have plenty of fresh fruit and vegetables, as well as home canned things, falls far short of the ideal. Every house ought to have separate compartments for fruit and vegetables, because decay spreads quicker in one unspecialized compartment and because vegetables impart disagreeable odors to delicate fruits. Let these compartments open from the north side of the cellar, if possible, to avoid the sun; and if they are partially underground all the better, as the temperature will be more even. See that they are separated from the section of the cellar which contains the furnace, or the temperature will be too high and the fruit will decay. Have each room as compactly arranged as possible for economy of space, and dispose the fruit in boxes and baskets, on shelves or trays, to avoid bending over and to keep them out of reach of mice.

It is not advisable, for the family's health, to store more than a small quantity of fruit in the house cellar, unless the temperature can be controlled so as to prevent the decay of fruit and vegetables. A separate building is better, if large quantities of apples, pears, potatoes, cabbages, etc. (enough to furnish fresh fruit and vegetables all winter) are to be carried over. The underground structure, the side-hill cellar and the old-fashioned outside cellar are not in as high favor as formerly.

TEMPERATURE AND ATMOSPHERE

Generally speaking, a temperature which will keep butter in good condition in summer is good for fruit in winter. To be more exact: Apples and cranberries, 33°; canned goods, dried apples and pears, 35°; grapes and lemons, 36°.

Among these, apples are by far the best, most popular and keep the longest, as may be seen by the following table:

Apples.....	2 to 8 months
Pears.....	2 to 4 "
Grapes (in sawdust).....	6 to 8 weeks
Lemons.....	8 to 12 "
Oranges.....	8 to 12 "

The latest discoveries of the Department of Agriculture show that apples for keeping must lose no time between the orchard and the storehouse. Picked fruit that has been in an ordinary temperature even for twenty-four hours is not in the best condition for storing. It is worse than useless to store anything but ripe and perfect fruit, and it must be handled gently to avoid bruising. Packing apples

on their sides instead of their ends is recommended. They must be examined during the season, so that the decayed ones may be removed before the others are affected.

An even temperature in the store-room is very important; also ventilation. The air should be moist enough to prevent evaporation, or the fruit will shrivel. The kinds that are sensitive in this way should be wrapped in paper, which has the two-fold advantage of insulation and preventing the spread of rot. Good as this practice is, it is very little used except in California. It will pay the amateur to do it, with choice sprayed fruit of long-keeping varieties.

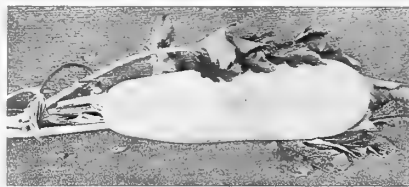
New York.

A. R. M.



Uncommon Vegetables Worth Knowing—Vegetable Marrow

THE vegetable marrow is a long, white summer squash, so smooth and with a skin so thin and tender that to prepare it for cooking is a much pleasanter task than peeling the thick, warty skin of the popular crookneck varieties. It is more satisfactory than the common white squash, which it resembles in quality, because it is less watery. As a keeper it deserves special mention, for some were taken from our vines at the first frost, and two months later they were still sound. It is remarkably fair and free from blemishes. We have always had to coddle our other squash vines to prevent destruction by insects, but the vegetable marrow vines were left almost entirely to themselves and no enemy appeared to attack them. They were not remarkably prolific in our ground,



124. A good thing—the vegetable marrow

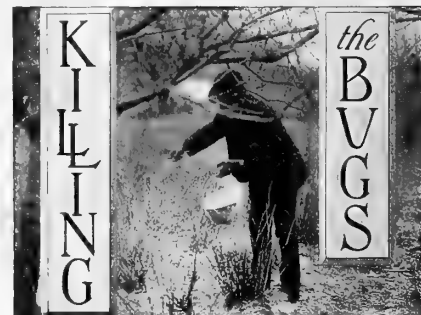
but they certainly made up in weight what they lacked in numbers, some specimens being nearly two feet long and more than six inches through, and very solid and heavy at that. Unfortunately, we did not weigh any of them.

Our English friends make more use of this squash than we do. They serve it with beef or lamb and cook it in a peculiar way; it is peeled and cut lengthwise, the seed is

removed, and after being boiled till tender in salted water it is covered with a cream sauce. We cooked this dish last season and can recommend it. It would not be recognized as squash, either in taste or looks, but is an attractive addition to the bill of fare, being especially useful in the fall when the summer vegetables have gone. A supply of vegetable marrows in the cellar will keep sound for many weeks.

I. M. A.

Scarsdale, N. Y.



A New Way of Killing the San José Scale

ANOTHER unboiled wash, which promises to be equally as effective against the San José scale as the one described on page 22, though it has been tested but one season, calls for 10 lbs. of sal soda in place of the caustic soda. It may be prepared as follows: Put 5 or 6 pails of hot water in a wooden barrel, preferably a thick pork or oil barrel, add the lime, quickly following that with the sulphur and sal soda, and stir till the slaking is practically completed. It may be necessary to add cold water at intervals to keep the mixture from boiling over. After the rapid bubbling or boiling is practically completed, cover the open barrel with burlap and allow it to stand 15 to 30 minutes or more. A deep-red or even pea-green color should be secured and very little sediment remain. Strain and dilute as for other washes. Ten lbs. of salt or thereabouts is frequently added to lime-sulphur washes, and while it does no harm, repeated experiments show very little or no benefit resulting therefrom. Another material, known as the kerosene limoid spray, has been extensively noticed in the past few weeks, and while it undoubtedly has value, its use in more than an experimental way cannot be advised at present. The limoid is a very fine commercial magnesium lime containing from 30 to 40 per cent. of magnesia, which appears to take up the kerosene, and for a winter or early spring application a 20 per cent. mixture composed of 5 gallons of kerosene and 20 pounds of limoid has been recommended. The kerosene is poured into a barrel, the limoid added and stirred until the two are thoroughly mixed; then a small amount of water is supplied and the mixture again agitated. It is then diluted to 25 gallons and again stirred vigorously for three minutes or more, till an emulsion is produced. A smooth mixture flowing as freely as water should be obtained.

Albany, N. Y.

E. P. FELT.



The Flowers Shown on This Month's Cover—Ixias

WHY ixias should not be as popular as freesias I cannot understand, for although the charming ixias lack the delicious fragrance of the freesias, they have at least twenty times as great a range of colors.

Ixias are spring-blooming plants with grassy foliage about a foot and a half high and with six petalled flowers an inch and a half or two inches across, which grow in clusters of six to twelve flowers. They have every important color except sky blue, even including green. It is an astonishing fact that these plants should have hundreds of named varieties in the old world and be completely ignored in America. The plants remain in bloom for about three weeks. The flowers close at night and remain closed on dark days.

Only connoisseurs in America grow ixias in their coldframes and greenhouses, but Mr. William E. Endicott, of Canton, Mass., has succeeded in growing them out of doors.

For years he has had thousands of ixias in flower during June, and he declares they make a braver show even than tulips. Mr. Endicott delays planting the bulbs until November 30th, as they are inclined to start growing in autumn, which would be fatal. He plants them three inches deep in unfrozen ground, as ixia bulbs cannot stand any freezing, and covers them with about three inches of leaves, hay or, preferably, pine needles. The secret of success with ixias is the management of the mulch in early spring. Uncover the tender shoots early and do all you can to harden them, but leave the mulch handy and cover the plants if there is any danger. Mr. Endicott is probably the first American who has found it practicable to propagate ixias at home. He finds that many of the offsets bloom the first year and nearly all the second.

HENRY MAXWELL.

How to Raise a Second Crop of Flowers in the Bulb Bed

THE beautiful full-page pictures on pages 68-69 will doubtless stimulate many home gardeners this year to raise a second crop of flowers in their bulb beds after the tulips, crocuses and narcissi are gone. If the bulbs are moved every year, as is the regular practice with the early or bedding tulips, it is easy enough, but when the bulbs are to remain three years or longer in

the same spot the problem is more difficult, because the plants which succeed the bulbs may require so much water during the summer months that the bulbs will not have a chance to ripen thoroughly. At the end of the growing season every kind of bulb needs less water or none at all. A friend of mine who has grown bulbs for twenty years tells me that he has tried nearly all the important annuals as succession crops on his bulb beds, and that the most satisfactory seed to plant after the bulbous flowers are gone is that of the annual phlox (*Phlox Drummondii*). In his experience, most of the other desirable annuals require too much water for the good of the ripening bulbs.

It is quite possible, however, that in a very rich soil that is highly retentive of moisture and not subject to drouth, other annuals can be used that would furnish flowers from June until frost, and for these one would turn naturally to verbenas, petunias, pansies and forget-me-nots, all of which are shallow-rooting plants, and therefore less likely to interfere with the bulbs than taller-growing plants like salvias.

It would be impossible to sow seeds of these plants in May and have flowers in June, but young plants already in flower can be purchased in May, from the local florist, for about ten cents each. While the four flowers just named are satisfactory for this special purpose, they are somewhat expensive, as the dimes count up quickly. One can sow seeds of these things outdoors in late April or early May, but one can hardly expect to have flowers in June.

If for any reason the home gardener does not wish to have Drummond's phlox, let him sow seeds of alyssum or candytuft, unless he thinks they are too commonplace. Mari-golds and zinnias are the other annuals which, with good management, would give from two and a half to three months bloom, but they are so much stronger-growing than the plants above mentioned that it would be too much to expect as good results.

New Jersey. THOMAS McADAM.



The English Ivy as a Ground-Cover Under Trees

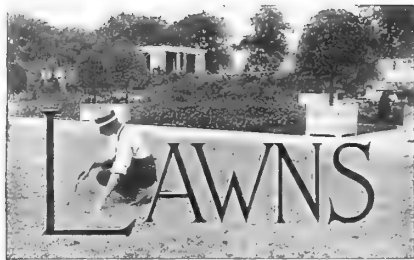
THE accompanying picture (Fig. 121) shows the marvelous results that can be obtained in California by the use of English ivy as a ground-cover under trees and in positions where there is too much shade for grass to grow well. It is impossible to get such results in the northern States with the English ivy. Our best plant for such purposes is the running myrtle (*Vinca minor*), the dark-green, glossy, ever-blooming plant with blue flowers which is so commonly used in cemeteries.

Somebody ought to make a careful study of the English ivy in the northern States. It is not considered hardy in climates characterized by alternate freezing and thawing in winter, but there are cases where it is perfectly hardy in localities a hundred miles or more north of the region where English ivy is commonly used by the people. Possibly there is a variety of the English ivy that is harder than the rest, and adapted to the climate of the northern United States. If so, this is not generally recognized. The conditions under which ivy succeeds along its northern limit should be carefully compared, as there is a wide difference of opinion as to how far north the English ivy is hardy, and under what circumstances it will survive our winters. If there is any consensus of opinion, it is that the ivy likes a somewhat moist and rich soil and a shaded position.

W. E. PENDLETON.



125. English ivy as a ground-cover under trees in California. In the northern United States the English ivy is not reliably hardy, and the best plant for covering the ground in the shade of trees and shrubs is running myrtle (*Vinca minor*), an evergreen trailer with thick, waxy leaves and blue, five-lobed flowers



The Art of Lawn Making

FOUR things are required to make a good lawn: time, soil, climate and intelligent labor. In England, they have a saying that it requires a hundred years to make a lawn, and two hundred years to make a good lawn. In this country, where we are trying to make suburban homes while you wait, and where a month or two seems a very long time, people are too impatient. It speaks well for their ambition that they want lawns as soon as they move into their houses, but they are really expecting too much. At the very best, it requires no less than three years to make a presentable lawn, and five or ten years to make what we uncritical Americans call a good lawn.

Many lawns fail for lack of soil. It is well known that our dwelling-houses are often built in most unlikely places. Building lots are old excavations or "fills." It is too much to expect to found a good lawn on a geological formation of empty tomato cans. A rejected dump of coal-ashes is not a favorable site. Even an ordinary sand-bank cannot be transmuted into a good lawn—at least, not without great expense of time, labor and money. Many suburban lawns are disappointing for this fundamental reason. In many cases good soil must be brought in.

MAKING A NEW LAWN

If the soil has to be brought in, it should be fairly stiff, though well drained. A good preparation of clay with just enough humus to give it life gives the best results. Sand is to be avoided.

Whatever the nature of the soil, it must be deeply stirred, partly because it will need good drainage and partly because a lawn cannot be reseeded frequently after it is established. If the drainage is not perfect, it will be well to put in stone or tile drains, although there is some danger of their being choked with the roots of weeds.

The surface of the lawn should be very carefully prepared, both with regard to the artistic effect of the curves of the surface, and with regard to the seed-bed furnished by the top-soil. It should be fine, friable, warm, and adapted to germinating seeds quickly.

The lawn should be sown in early spring—the earlier the better. An abundance of seed should be used. The best lawns in middle latitudes are made of June grass, sometimes known as Kentucky blue grass. In Southern States, the Bermuda grass is best. This often gives a fairly good lawn,

though inferior to the June grass. June grass should be sown at the rate of three bushels to the acre, often more. Four bushels will not hurt. Bermuda grass should be sown at the rate of fifteen pounds to the acre. Seedsmen offer for sale various lawn grass mixtures, all of which are good, providing they are made up of good seed. Still none of them is better than pure June grass, at least for most conditions. Unfortunately, some of the less scrupulous dealers dump their refuse grass seed into their lawn-grass mixtures. If any one prefers to use a mixture of grass seed, he may as well make it himself. The following formula will be satisfactory in most places: June grass, three bushels; red top, one bushel; timothy, three quarts; and white clover, two quarts.

There are nearly always patches which do not catch well at the first sowing. Resowings may be made two or three times during the first year, choosing cool rainy weather for the work. Similar resowings under certain circumstances will probably be required for two or three years. Even when a lawn has been established for many years it sometimes becomes dead in patches during very dry summers.

The lawn should be liberally fed. It should be well fertilized when it is sown or preferably the fall before. So far as the best plant food is concerned, there can be no doubt but that well-rotted stable manure is best. It has this drawback, however—it is likely to be contaminated with weed seeds. On this account chemical fertilizers are largely used. These must be strong in nitrogen. Many dozen of these are prepared and sold by the leading dealers in fertilizing chemicals. The rule should be to use these liberally. See the Fertilizer Department for formulas adapted to the lawn.

REPAIRING OLD LAWNS

There are thousands of people in this country who have lawns already fairly established that need frequent and more or less expensive repairs. Some of them show yellow patches, where grass is often absent, and some are badly infested with weeds. The majority of cases are hopeless, and the most effective thing would be to plow up the entire lawn and begin again. In some cases this treatment can be limited to the worst spots in the lawn. If the soil is in good condition, fairly good results can be secured by scarifying the surface deeply with a sharp rake. On larger lawns such places may be gone over with a spading harrow. It is a good plan to accompany all such sowing with a liberal top-dressing of well-rotted barnyard manure, or with the nitrogenous fertilizers already mentioned.

A LAWN FULL OF WEEDS

The best way to get rid of weeds is to crowd them out with grass. A first-rate lawn will overcome all intruders, except dandelion and plantain. This means, of course, when the fundamental conditions discussed above are complied with. The frequent use of a good lawn mower is one of the best means of discouraging weeds. The application of lime or land plaster to soils which have a tendency to be acid encourages the growth of grass. In certain cases, however, when everything has been done aright, some weeds will persist, especially plantain and dandelion. The only thing to be done in such cases is to pull them out by hand. This work is expensive, though it sometimes proves much cheaper than was expected. At any rate, a good lawn is worth the price, and there is no other way.

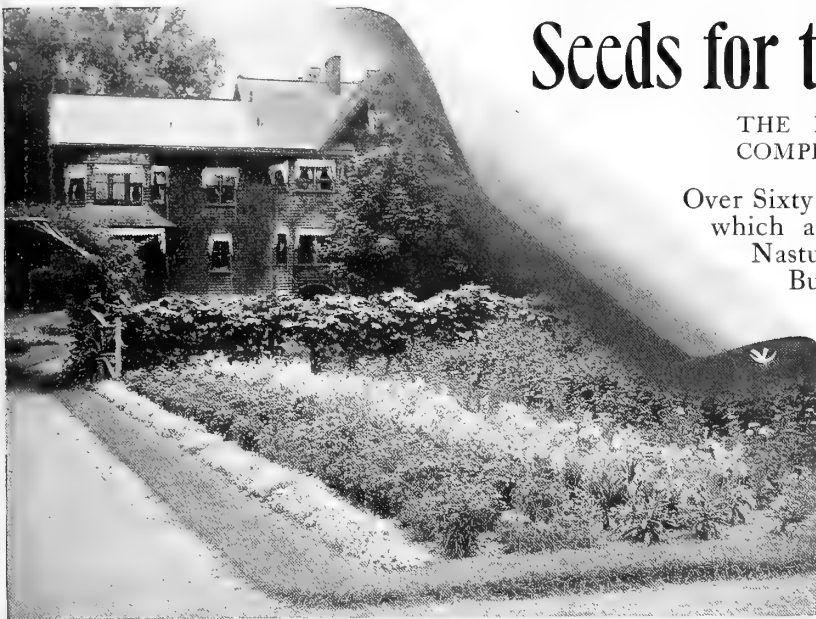


126. This picture was taken ten days after the one at the top of the page, and indicates the improvement made by digging out dandelions by hand. A lawn full of dandelions should be plowed up

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| 1 qt. Bean, Stringless Green Pod | 1 qt. Parsley, Moss Curled |
| 1 " " Wax | 1 qt. Peas, Dwarf, Early |
| 1 qt. Beet, Crimson Globe | 1 " " Medium |
| 1 qt. Cabbage, All-Head | 1 " " Late |
| 1 qt. Carrot, Chantenay | 1 qt. Radish, 20-day Forcing |
| 1 qt. Corn, Early Sweet | 1 qt. Squash, White Bush |
| 1 " " Late | 1 qt. Swiss Chard, or Summer Spinach |
| 1 qt. Cucumber, White Spine | 1 qt. Tomato, Dwarf Champion |
| 1 qt. Lettuce, Black Seeded Simpson | 1 qt. Turnip, Early Milan |
| 1 qt. Onion, White Globe | 1 qt. Sweet Peas, Eckford's Mixture, gratis |
| 1 " " Large Red | |

Collection B — For the Suburban Garden

This collection contains 32 varieties. Prepaid, \$2.50

- | | |
|--|---|
| 1 qt. Bean, Stringless Green Pod, pint | 1 qt. Parsley, Moss Curled |
| 1 " " Wax, pint | 1 qt. Parsnip, Hollow Crown |
| 1 " " Bush Lima | 1 qt. Peas, Early Dwarf, Nott's, pint |
| 1 qt. Beet, Crimson Globe | 1 " " English Wonder, pint |
| 1 qt. Cabbage, Early Wakefield | 1 qt. Pepper, Sweet Mountain |
| 1 " " Danish Ballhead | 1 qt. Pumpkin, Vaughan's Sugar Pie |
| 1 qt. Carrot, Chantenay | 1 qt. Radish, 20-days' Forcing |
| 1 qt. Celery, White Plume | 1 " " Crimson Giant |
| 1 qt. Cucumber, White Spine | 1 qt. Salsify, Mammoth |
| 1 " " Chicago Pickling | 1 qt. Squash, White Bush |
| 1 qt. Lettuce, Curled Leaf | 1 " " Delicious " |
| 1 " " Summer Head | 1 qt. Swiss Chard, or Summer Spinach |
| 1 qt. Musk Melon, Rocky Ford | 1 qt. Tomato, Tall Champion |
| 1 qt. Water Melon, Coles' Early | 1 qt. Turnip, Early Milan |
| 1 qt. Sweet Corn, Early | 1 qt. Bush Sweet Peas, Mixed, gratis, 1 oz. |
| 1 " " Late | |
| 1 qt. Onion Sets, White Bottom, qt. | |
| 1 " " Seed, Globe Danvers | |

Collection C — For the Farm Garden

This collection contains 47 varieties. Prepaid, \$5.35

- | | | |
|--|--------------------------------------|--------------------------------------|
| 1 qt. Bean, Stringless, Green Pod | 1 oz. Cucumber, Chicago Pickling | 1 oz. Parsnip, Magnum Bonum |
| 1 " " Wax | 1 pkt. Egg Plant, Improved Purple | 1 qt. Pea, Nott's Excelsior |
| 1 pint " Bush, Lima, Large | 1 " Endive, Green Curled | 1 " " English Wonder |
| 1 oz. Beet, Crimson Globe | 1 " Kale, Dwarf, Green Curled | 1 " " Improved Telephone |
| 1 " " Half-long Winter | 1 " Kohlrabi, White Vienna | 1 pkt. Pepper, Sweet Mountain |
| 1 pkt. Cabbage, Early Wakefield | 1 " Leek, Round | 1 " Pumpkin, Sugar Pie |
| 1 " " All-Head Summer | 1 " Lettuce, Black Seed, Simpson | 1 oz. Radish, 20-Day Forcing |
| 1 " " Danish Winter | 1 " " Summer Heading | 1 " " French Breakfast |
| 1 oz. Carrot, Select Danvers | 1 oz. Musk Melon, Rocky Ford | 1 pkt. Salsify, Mammoth |
| 1 pkt. Cauliflower, Vaughan's Snowball | 1 pkt. Water Melon, Cole's Early | 1 oz. Swiss Chard, or Summer Spinach |
| 1 " " Celery, White Plume | 1 qt. Onion Sets, Yellow Bottom | 1 pkt. Squash, Mammoth White Bush |
| 1 " " Winter Queen | 1 " " White Bottom (for green onion) | 1 " " Delicious " |
| 1 pint Sweet Corn, Mammoth White Cory | 1 oz. Onion, Globe Danvers | 1 qt. Tomato, Earliana |
| 1 qt. " Early Champion | 1 " " Southport Red Globe | 1 " " The Stone |
| 1 " " White Evergreen | 1 pkt. Parsley, Moss Curled | 1 qt. Turnip, Early Milan |
| 1 oz. Cucumber, White Spine | | 1 " Rutabaga, Improved American |

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How to Buy Nitrogen for the Home Garden

OF the three necessary components of all complete fertilizers—nitrogen, potash and phosphorus—the first is the most expensive and, in a sense, the most necessary. We may call it the unit element, the one which practically determines plant growth and ability to assimilate the others. There are four great sources of nitrogen: the legumes, manure, animal refuse, and chemicals.

Although about four-fifths of the atmosphere consists of nitrogen, few plants possess the power of acquiring it from that source. Of those that can do this, the most familiar are the clovers, peas, beans and vetches, while most other plants commonly grown in the lawn, garden or orchard possess little or no such power. Where it is possible to give over a portion of the land to the growth of such nitrogen-fixers and to plow them under when in good growth, nitrogen may be supplied to the soil in an inexpensive and satisfactory manner. In addition to the nitrogen, they furnish decaying vegetable matter, which assists materially in lightening and mellowing the soil, as well as in its permanent enrichment. This is practicable and profitable to the farmer who can spare his land for a season for this purpose, and also to the professional fruit grower, but is hardly possible as a means of fertilizing the garden, or for isolated fruit trees or ornamental plants.

Stable manure, if it has been properly cared for, is rich in nitrogen and supplies the much-valued humus of the turned-under green crops, but it is also rich in seeds of weeds and undesirable plants that have ruined many a good lawn and added many a backache to the enthusiastic gardener's burden. It also contains phosphorus and potash.

Prominent animal products are dried blood, fish guano and tankage. The percentage of nitrogen in animal products ranges from six to ten per cent., and there is also a wide variation in the availability of the nitrogen as plant food, this availability depending entirely on the rapidity of decay of the matter, which involves a double chemical change of the nitrogen, first into ammonia and then into nitrate, before the plant can utilize it. Animal fertilizers are largely used in farming operations, but in my opinion there is no inducement for the home gardener to buy them, because of their great variation in quantity and availability of nitrogen, to say nothing of their offensive odor.

The chief chemical sources of nitrogen are nitrate of soda and sulphate of ammonia. The

Strawberry Plants and SEED POTATOES

You can make more money if you plant intelligently. Write and tell us about your soil. We'll send you our Free Descriptive Book. Over 100 varieties.

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and names of two flower loving friends I will start you with 4 packets of pure, fresh seed—Nasturtiums—20 kinds; Royal Show Pansies—100 colors; Sweet Peas—40 varieties; Asters—all kinds. FREE—"Floral Culture," and 13th Annual Catalogue, with big list of rare seed bargains; also my offer of \$100 cash prizes for best pictures of lawns and yards sown with the famous Lippincott seeds. Write TODAY; you'll forget it TOMORROW.

MISS G. H. LIPPINCOTT

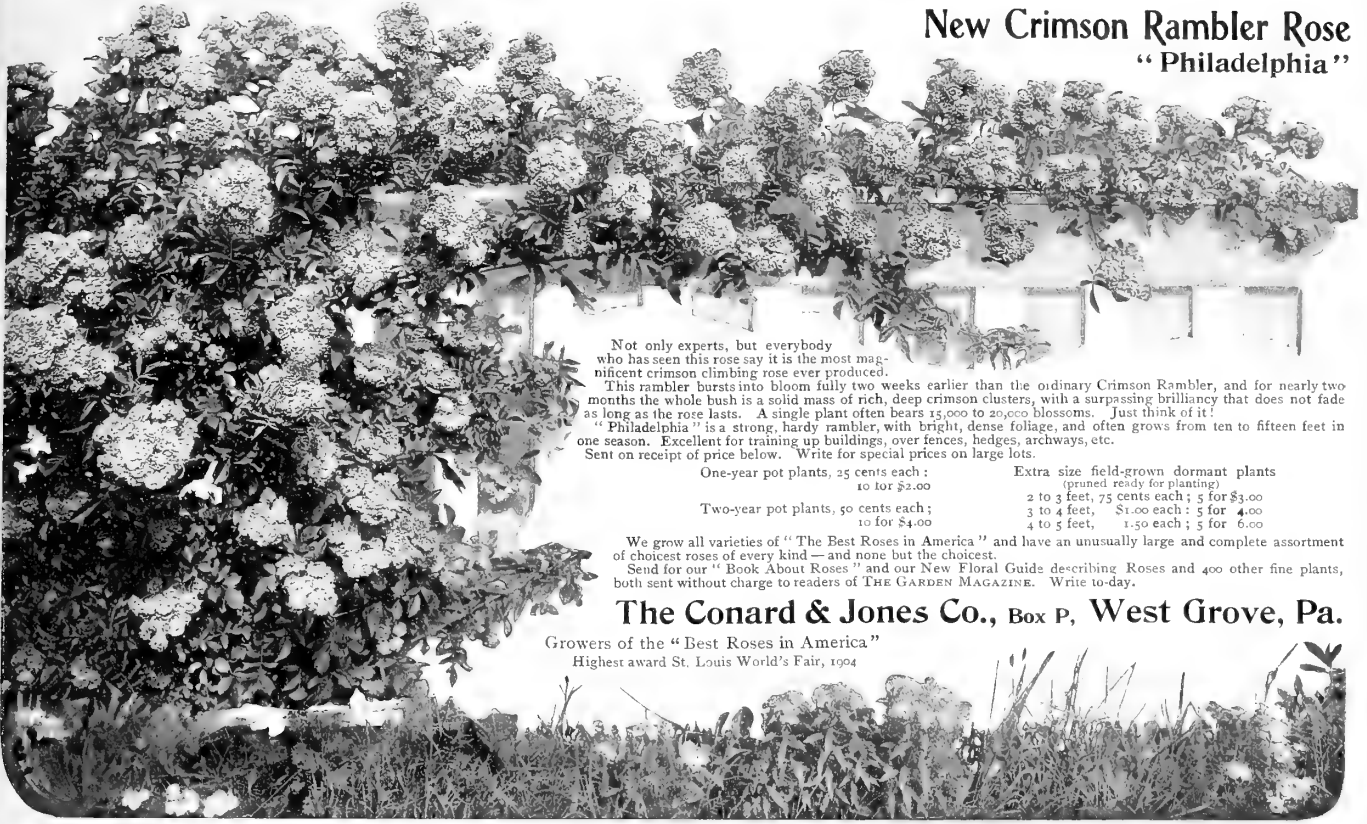
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Nothing adds more to the beauty and value of a home place than a nice lawn. Our Lawn Book tells how to make and keep a beautiful velvety lawn. Of great interest and worth dollars to every one who has even a small place, but we will be glad to furnish you a copy of same free if you mention this magazine. Our large catalogue of Seeds, Plants, Shrubs, etc., would also be of value to you. Better ask for it.

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Not only experts, but everybody who has seen this rose say it is the most magnificent crimson climbing rose ever produced. This rambler bursts into bloom fully two weeks earlier than the ordinary Crimson Rambler, and for nearly two months the whole bush is a solid mass of rich, deep crimson clusters, with a surpassing brilliancy that does not fade as long as the rose lasts. A single plant often bears 15,000 to 20,000 blossoms. Just think of it! "Philadelphia" is a strong, hardy rambler, with bright, dense foliage, and often grows from ten to fifteen feet in one season. Excellent for training up buildings, over fences, hedges, archways, etc. Sent on receipt of price below. Write for special prices on large lots.

One-year pot plants, 25 cents each :
10 for \$2.00
Two-year pot plants, 50 cents each ;
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Extra size field-grown dormant plants (pruned ready for planting)
2 to 3 feet, 75 cents each ; 5 for \$3.00
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4 to 5 feet, 1.50 each ; 5 for 6.00

We grow all varieties of "The Best Roses in America" and have an unusually large and complete assortment of choicest roses of every kind — and none but the choicest. Send for our "Book About Roses" and our New Floral Guide describing Roses and 400 other fine plants, both sent without charge to readers of THE GARDEN MAGAZINE. Write 10-day.

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In all the best varieties; grafted on stock that will grow everywhere.

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A splendid stock of this charming novelty, both in pots and dormant plants. All the Roses we offer are strong, two years old and will grow and flower in profusion the coming summer. The prices will be in our new spring catalogue which will contain the most complete list of Roses and other stock to beautify the home grounds ever offered.

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The most complete collection ever made in America, now growing in our Nursery, suitable to plant in any part of the country.

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In English Hybrids, Catawbiense and Maxima in any quantity. We have thousands growing in our Nursery that are acclimated and can be dug with a large ball of earth. Special prices in car lots.

Old-Fashioned Flowers The largest collection ever held in America now growing in our Nurseries.

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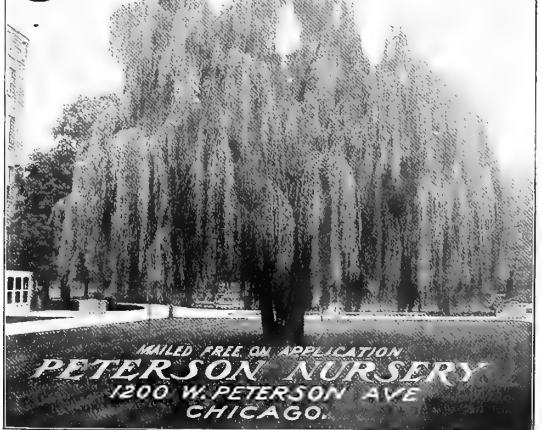
Dogwood, Red and White Flowers Fine specimens 3 to 10 feet high.

We invite readers of "The Garden Magazine" to visit our Nurseries, when we will be pleased to give any information as to the varieties of stock necessary for any locality. SEE OUR NEW SPRING CATALOGUE FOR PRICES AND PARTICULARS.



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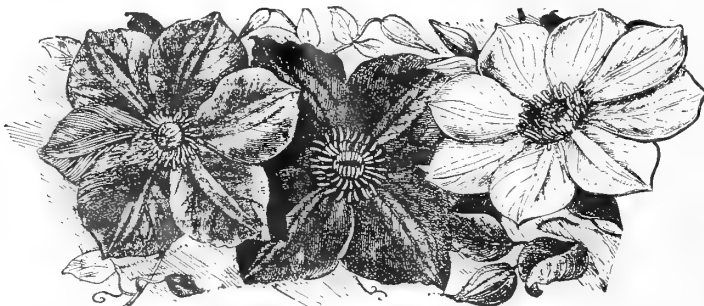
A GRAND PRIZE for Vegetables at ST. LOUIS was won by the products of Burpee's "Seeds that Grow"

If you garden you want **THE BEST**, and we shall be pleased to mail you **Burpee's Farm Annual for 1905**—an elegant *new book of 178 pages*, which tells the plain truth, with hundreds of illustrations, beautiful colored plates and describes *Superb Novelties* of unusual merit. *Write to-day!* A postal card will do, while it is sufficient to address simply

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latter is a by-product of the manufacture of coal gas and the richest in nitrogen of all fertilizer elements, but it must undergo the change to nitrate before growing plants can use it. Its price is against it.

Nitrate of soda is, I believe, the most abundant and cheapest of all forms of nitrogen for the home garden. In its commercial form it contains from fifteen to sixteen per cent. of nitrogen in a state that makes it immediately available for the plant. It comes in the form of a coarse salt, is cleanly to handle, and is without offensive odor. Nitrate of soda may be used safely and advantageously as a top-dressing on the lawn or garden or around shrubs or trees. It absorbs moisture from the atmosphere and quickly dissolves. That it is ready for immediate use by plants may be easily shown by sowing some of it on the lawn in the shape of any well-marked figure. Under favorable conditions, after five or six days the figure will be plainly seen in the luxuriant growth and rich, dark-green color of the grass. Under the best conditions as much as 400 pounds per acre may be used, but the safe and wise quantity for general purposes is 100 pounds per acre.

Nitrate of soda hastens the maturity of fruits and vegetables. The amount of nitrogen taken up by a given crop varies from forty-six pounds per acre for grapes to 150 pounds per acre for cabbages. Nitrogen alone is not a complete fertilizer. Plants must have potash and phosphorus, but it is always safe to add nitrogen either to any fertilizer that is ordinarily used or to apply it directly to the soil in form of a top-dressing. Nitrate of soda may be obtained from any seed store or fertilizer dealer.

New York.

BLANTON C. WELSH.

Two Formulas for Lawn Fertilizer

IF I were laying down a lawn (and I should prefer to do so with chemicals rather than stable manure, to avoid weed seeds), I should use a mixture to analyze about

3 per cent. ammonia,
12 per cent. phosphoric acid,
10 per cent. potash,

and it should be made up of dissolved bone and muriate of potash, with a portion of the ammonia in the form of nitrate of soda, say one-third of it. This would give a mixture that would insure a good catch of grass seed and would place in the soil a good quantity of phosphate of lime and potash as a permanent dressing for the grass roots to feed upon. The following year I would top-dress with a fertilizer containing, say

6 per cent. ammonia,
6 per cent. phosphoric acid,
6 per cent. potash,

the ammonia to be present one-half in the form of nitrate of soda, the rest in the form of organic matter like that obtained from dissolved bone.

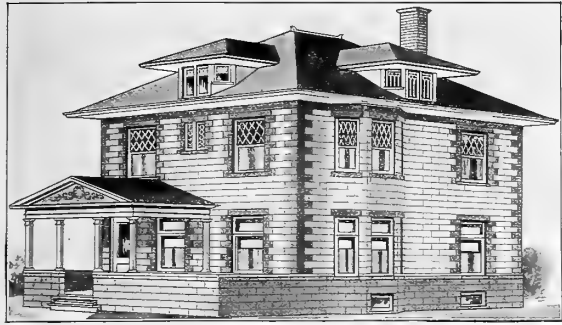
Such a mixture I have found to work admirably on lawns. It gives a beautiful green turf and avoids the presence of obnoxious weed seeds and also noxious odors from unsightly stable dressing.

Massachusetts.

W. H. B.

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Write and tell us about what you would like, and we will prepare sketch and estimate, free of charge, and submit for your consideration. Our estimate will include the structure, erected complete with heating and ventilation, ready to receive the plants, or if you desire it we will furnish the material only, cut and fitted ready to go together, with complete working drawings for its erection.

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Hotbed Sash and Frames staging, special hand-made greenhouse putty, "Pierson" steam and water boilers

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The case is made of heavy antique oak, in dull finish, carefully and substantially built. It is fitted with a durable eight-day American movement that is guaranteed to keep good time, and strikes the hour and half-hour on a sweet-toned cathedral gong. The figures and hands are of brass finish, polished, on a dark oak dial to match case. The latch and hinges are of old-fashioned design in gun-metal finish.

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Pruning Roses

ROSES are a good illustration of the wisdom of sacrificing the present for the sake of the future. From the day they



127. H. P. rose, before pruning (Gen. Jacqueminot)

The best place to cut is just above a bud on the outer side of a cane.

The common roses that everybody grows in the North are mostly hybrid perpetuals, which are supposed to give scattering bloom all summer besides the main crop of flowers in June. Before they show any life in the spring, cut off from two-thirds to four-fifths of last year's wood and any weak-looking shoots.



The result will be strong plants and large flowers. When this is done no summer or fall pruning follows. For a quantity of flowers, at the expense of size, cut back only one-half, and in the summer unless all the flowers have been gathered, remove the shoots which have bloomed. All sprouts on the stock and weak shoots must also be removed and any used up stems, as the plants become old.

Hybrid teas should be placed where they can have protection in the winter. They, too, can stand severe pruning, as described for perpetuals.

Climbing roses, like the Crimson Rambler,

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under good pressure is a necessity in the country home for proper fire protection and safe sanitation

The Caldwell Tank and Tower insures this



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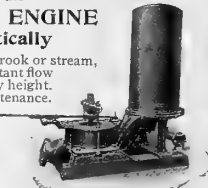
Hoping you will be successful in your enterprise, I beg to remain, Yours very truly, E. W. BLISS.

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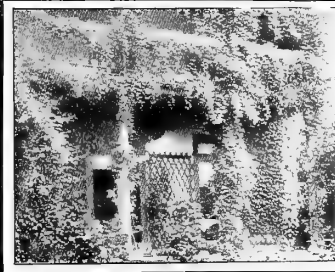
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Any collection 25c; any 5 for \$1.00; any 10 for \$2.00 and

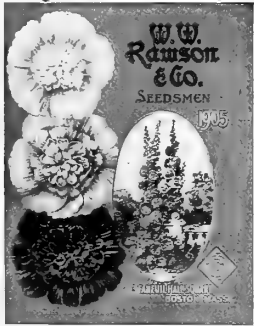
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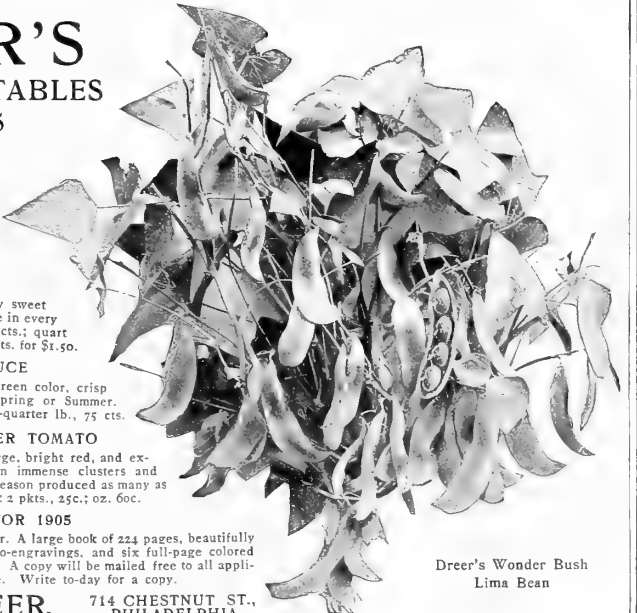
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Dreer's Wonder Bush Lima Bean



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NEW BABY RAMBLER ROSE**
THE EVERBLOOMING DWARF CRIMSON RAMBLER

This beautiful new French rose flowers in clusters of from thirty to fifty blooms. They are in every way like those of the Climbing Crimson Rambler and are produced perpetually. We have closely watched this new Rose in our greenhouses since November, 1903, and they have never been without flowers from that time until the present day. We had a large bed in our grounds and the plants were constantly in bloom until November—even in the hottest weather. This is a remarkable record. We have grown thousands of varieties of Roses but have never met one that possessed all these remarkable qualities combined.

It is the Rose for bedding out. No garden, no matter how small or large, should be without it. There is no Rose in existence that equals it in freedom of bloom and perpetual blooming qualities. It grows about 2½ feet high.

Prices: 2 INCH POT PLANTS, ready March 20, each 40c., 3 for \$1.00, 12 for \$4.00, prepaid by mail, 100 for \$25.00, by express.
DORMANT one year old field plants, ready now. Each 75c., 3 for \$2.00, 12 for \$7.50, 100 for \$55.00; if to go by mail add 5c. per plant. After May 15th, which is too late for dormant plants, we will send 4 inch pot plants instead of dormant ones. Price: each, 60c., 3 for \$1.75, 12 for \$6.50, 100 for \$50.00, by express.
We also have a few hundred of extra large 3½-year-old plants, which we offer at \$2.00 each, 3 for \$5.00, 12 for \$18.00, while stock lasts. See also offer on back page of this magazine.

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Flower Seeds. You will find EVERYTHING in our Catalogue. Any one interested in Japan flowers address us. Our firm was the first one to import from Japan in 1878.

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require less pruning. Cut off, before the buds open in the spring, one-fifth to one-third of last year's growth, and if the plants are established cut off flowering wood that has become old and feeble. In the summer take out most of the dead wood that has flowered, pinch out the weak growth and train the new wood



129. Crimson Rambler, before pruning

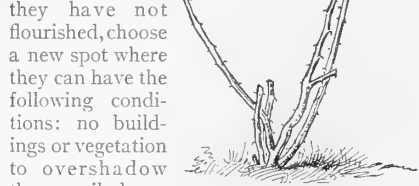
to cover bare places. This treatment will give vigorous plants and plenty of roses.

Tender tea roses may be cut back at the beginning of the season and pruning continued while the season lasts.

A general rule is "cut back weak-growing kinds severely; strong growers moderately."

Roses are benefited by being taken up every four or five years. The roots and tops should be pruned before they are reset. If they have not flourished, choose a new spot where they can have the following conditions: no buildings or vegetation to overshadow them; soil clayey yet fibrous; some sunshine, yet not so much that there is danger of their drying out. An east or north slope where there is a fence to break strong winds would be an ideal spot.

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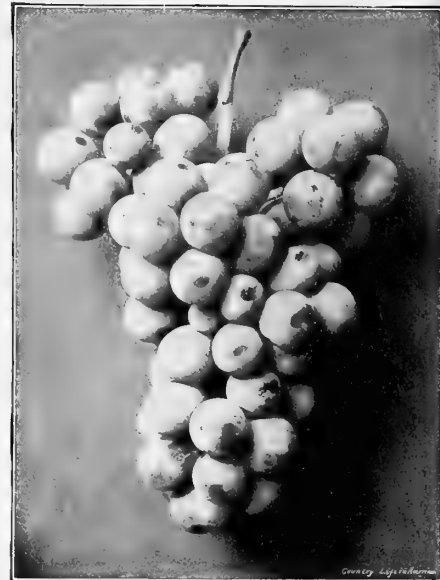


130. Crimson Rambler, pruned (scale somewhat larger than Fig. 129)

A New Way to Render Tomatoes Immune from Disease

A RECENT experiment reported in the Journal of the Royal Horticultural Society of England indicates that tomato and cucumber plants can be rendered immune to three diseases that are making havoc with them in greenhouses, viz., leaf blight (*Cercospora melonis*), *Dendryphium comosum* (a fungus common in manure, not previously known as parasitic on these plants), and mildew (*Cladosporium fulvum*, the great enemy of tomatoes in the southern United States), by watering the plants every third day with a solution consisting of one part of copper sulfate in 7,000 parts of rain-water. In the experiments described the plants were watered in the afternoon and the soil was soaked thoroughly. This solution does not destroy the spores, as all three species of parasites were germinated in it, and it was assumed that it might modify or arrest the production of some substance in the leaves which favored the entrance of the fungus into the plant.

S. FRASER.



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NO garden is complete without a sufficient number of grape vines to supply an abundance of this delicious fruit. For nearly 40 years we have been furnishing high-grade vines for this purpose.

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telling, in detail, all you'd like to know about the cream of the

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shows in NATURAL COLORS and accurately describes 216 varieties of fruit. Send for our liberal terms of distribution to planters.—Stark Bro's, Louisiana, Mo.

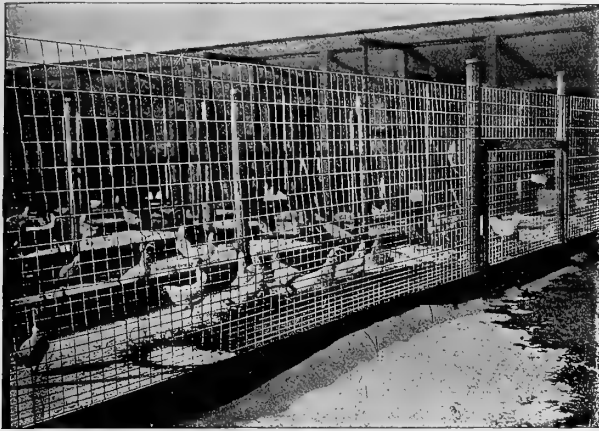
The Flowers

I grow in quantity here in cold New England are the best hardy garden sorts, the old reliable kinds that everybody wants for the border or shady corner. Also the best hardy Ferns and Wild Flowers of New England suitable for cultivation. Illustrated catalogue sent on request.

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Keeps Chickens in Their Yards and Out of the Garden



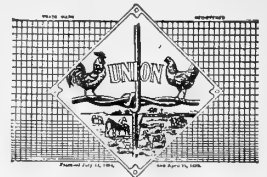
Twisted wire cables (stronger than single wire) and single wire uprights, made fast by the "Union Lock," form rectangular mesh that permits fence to conform to inequalities of the ground without cutting. Will not buckle or sag.

This is impossible with netting.

The bottom six rows of mesh are 1 1/4 x 3 in., the next three are 1 1/2 x 3, then five rows are 2 x 3; all above this are 4 x 3.

This arrangement prevents escape of chickens, young or old. Union Lock fence is economical, as no top rail or bottom boards are required and only half the usual number of posts are necessary.

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· IN AMERICA ·



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Training Berry Bushes

WHY should the picking of berries be a job that tears our clothing and scratches our hands? Why not train the berries to accommodate themselves to our convenience instead of adapting ourselves to their unreasonable habits? March is the time to take the first step to secure an excellent crop and an early one. Set up stakes and run wires from one to the other. To the wires tie the berry stalks, as nearly upright as they will go. This will encourage the flow of sap and you will have better and earlier berries than if they are left to themselves.

Before doing this it will be necessary to trim the vines if this has been neglected after the last fruiting season. Choose a time after a few dry windy March days and you will find that the old fruit canes will snap off easily.

A more elaborate trellis, which is built with a view to laying it down in the fall, is made with strong uprights hinged to short posts by pivots near the lower end. The wires on this trellis are arranged in pairs, one each side of the vines, the ends being fast to cross-pieces on the upright; this makes tying unnecessary. When standing, this trellis should be braced, and when prostrate, slanting stakes may be put in here and there to press the wires down. The chief value in laying the plants is to get them out of the way of cold, dry winds. The snow is often sufficient protection for the hardy kinds. In severe climates or for tender kinds a covering of boughs or straw can be provided. Always raise this trellis in the spring while the buds and wood are still in a hard, dormant condition.

Of course, if a trellis is planned, sufficient space should be allowed for paths. Between the rows the distance should be six to eight feet and four to five feet between the hills in the row. If the simpler trellis is more to your taste, it can be made with a stake to each hill or stouter stakes at a greater distance, the wire, one or more strands, being fastened to each stake. When the fruit season is over and the canes have become dead, cut them out and also all the surplus new growth. Four or five good canes will be enough to a hill, or, if they grow in rows, leave two to a foot.

New plants of black raspberries may be obtained by covering the tips with earth the middle of August. On account of disease which attacks raspberries, it is best to renew them about every six years.

A FENCE BEAUTIFIED

PETER THE GARDENER

says: "Join the FlowerLovers' Club, have a Garden Beautiful and help to Beautify America." Send you for a year's membership and 1 pkt. each of the three vines Peter has picked out as *par excellence* for covering that bare fence, wall or other unsightly object.

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With a No. 6 Iron Age Combined Double and Single Wheel Hoe, Hill and Drill Seeder, you can, with one pair of handles and the interchangeable attachments, open the ground, distribute the fertilizer, plant and cover the seed, roll, rake, weed, plow, hoe and cultivate your garden. No. 1 Iron Age Double and Single Wheel Hoe (the wheel hoe form of the No. 6 combined tool) appeals to the amateur gardener.

No. 6 Iron Age Combined Double and Single Wheel Hoe, Hill and Drill Seeder.



It has a full equipment of hoes, plows, rakes, etc., and with all these interchangeable parts you can do the work of cultivation easier and quicker than ever before. These are only two of the many famous Iron Age Implements. Our valuable 1905 Iron Age Book is full of interesting information. Do not fail to get it. Free copy mailed on request.

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Hardy flower garden the second season. About the house large trees moved.

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- ☐ Delphiniums, Japan Iris, Pæony, 25 cents each, \$2.50 doz.
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- ☐ Boltonia, Cerastium, China Pinks, English Daisy, Forget-me-not, Iris Cristata, Siberian Iris, Moss Pink, Monarda Didyma, Narcissus clumps, Sedum. 10 cents each, 75 cents dozen, \$8 hundred.
- ☐ COVER PLANTS: Myrtle, \$2 hundred, \$10 thousand; Yucca, trans., \$5 hundred; Yucca, seedlings, \$2 hundred, \$10 thousand; Iris Cristata, \$5 hundred; Moss Pink, \$8 hundred.

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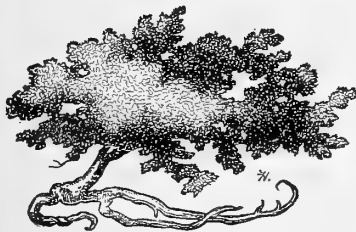
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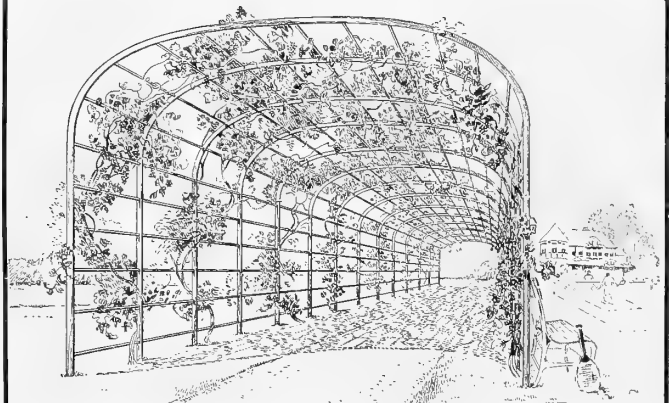
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at prices which, after you investigate, will attract your close attention. If you have any problem to solve, any difficulty to meet in the way of Landscape work and Gardening, we are willing to assist, and will be glad to have you write us. From all parts of the country we have had inquiries in past seasons and with good results, and we invite correspondence with those who wish aid of an expert character.

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Why Evergreens Should Be Massed Instead of Planted Singly

MUCH interest will be excited by Mr. Henry Hicks' paper on the best hardy evergreens in the initial number of THE GARDEN MAGAZINE. I believe, however, that he is too hard on the Norway spruce and does not point out the weakness of the white pine. The white pine on Long Island is afflicted with a mysterious disease. A tree that seems to be in good health this year may be dying next. It is also liable to breakage by high winds. I doubt if there is on Long Island a single white pine that is native to the soil. Doubtless, there are many volunteer seedlings, from planted trees, but no original forest. In this locality, therefore, it is as much of a foreigner as is the Norway spruce. Nearly the same complaint can be made of the hemlock (*Tsuga Canadensis*). So far as I know, there is only one small native group of these trees on Long Island. It is one of the most susceptible of all trees to the disastrous effects of high winds.

I agree with Mr. Hicks that evergreens should be massed, not planted singly, and should be on northern slopes protected from high winds and the winter sun. Evergreens planted singly on open lawns without a sheltering background never make sightly specimens. Except on roadways, it is best to plant trees in masses, and for this purpose it is not essential to have costly specimen trees. Given a windbreak, it is better to plant many small trees at the same or less cost, though a few large specimens may be advantageously placed in the foreground and if protected by the main planting, will be satisfactory when considered singly or in relation to the whole picture.

It is well to have large specimen evergreen trees, but they should be near a group of other trees, not only for protection, but for beauty.

T. F.

Long Island.

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Mary's Garden and How It Grew. By Frances Duncan. The Century Company, New York, 1904. 5 x 7 inches; 261 pages; illustrated with drawings by Lee Woodward Zeigler. Price, \$1.25.

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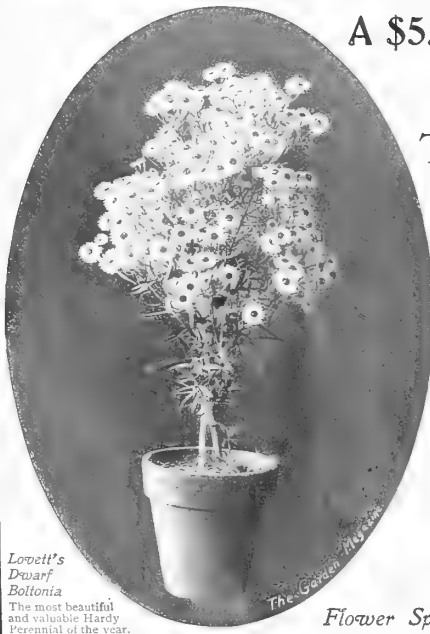
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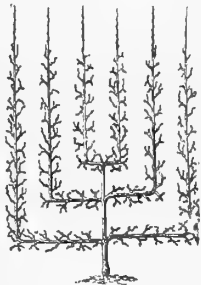
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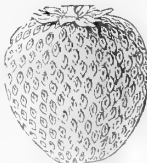
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Plants for the Office Window

Q. I want a beautiful plant for my office window which opens on a court that never gets the sun. I am sick of the conventional florist's stuff. I want something new, preferably Japanese or Russian, or with flowers six inches across, that will make customers glad they came to see me. I want it to bloom a month and throw it away if it gets shabby.

HENRY R. WILLIAMS.

New York, N. Y.

A. No decent plant can be expected to bloom more than two weeks in such a place. Why don't you try that beautiful little red-berried Japanese shrub with waxy evergreen leaves which the florists call *Ardisia crenulata* and the importers of Japanese plants *Ardisia crispa*? It may cost you a dollar, but will last two months, if you get your stenographer interested. She will transfer it from the window to her desk every night, so that the janitors won't open the window and let the winter wind chill it. If the berries drop off, let her take it home, and the chances are she will take good care of it for the next ten months (it looks well all the year round) and bring it back next winter with berries on it.

SUGGESTIONS



[In this department we invite suggestions from amateurs concerning anything connected with the home garden. If you have worked out the ideas, so much the better. We offer a five-dollar bill for the best suggestion that comes to us each month. Address Suggestions Department, THE GARDEN MAGAZINE, 133 East 16th Street, New York, N. Y.]

Forcing Twigs in Water

FROM February 15th to March 10th is the time to bring in twigs of flowering shrubs and trees and put them in a vase of water in a sunny window sill, where they will open during the dreariest month of the year—the month before spring comes. Among the showiest and most interesting are the flowering dogwood, Forsythia, apple, peach, pear, red maple, elm, beech, and horse chestnut. Magnolias have the largest flowers of all, but it is doubtful if any one has succeeded with them. Change the water every day or two.

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A Garden of Desert Plants

THE best kind of wild garden for California is a desert garden. I do not know any one who has started a garden of desert plants who has abandoned it. On the contrary, every one is adding to his garden and enthusiasm every year. Such a garden is especially suited to a sandy or rocky country. If it is necessary to bring in rocks they should be arranged in a nature-like manner, not in lines or in any way that suggests design.

Some permanent planting, to lend dignity and strength, must be first considered, and century plants (*Agave Americana*), which are typical of every part of California, are a good beginning. Put two or three at unequal distances on the highest point in your desert, to look like the parents; place the others (largest next) so they will look as if they had sprung up from seeds washed down from the parent plants.

This much of the desert may be started at any time, but the best season for most of the planting is after the first two or three rains of winter. Allow the weeds to come up all over the plot an inch or so high; cut them down; wait for the next crop, which will be after the second rain, and when these are all killed you will be safe in sowing seeds or putting in plants. First, get seeds of "Baby Blue Eyes" (a species of *Nemophila*), scatter these on the north and east sides of the century plants, rocks, trees, mounds of earth, or anything that will in any way protect the ground from the sun. Next procure seeds of California poppies in three or four shades of color and sow broadcast, not all over the plot, but in zones varying as much as possible in size and shape. A third flower should be our scarlet larkspur (*Delphinium cardinale*), which should be sown in the hottest and driest places. Few of these latter will flower the first year unless your soil gets very warm, but each succeeding year will see them increase in number and height of flower spike, and their brilliant scarlet is not surpassed by any flower, native or foreign.

Now any native annuals or perennials may be sown, but do not overcrowd the soil, or the "wild" effect will be lost.

It is best to watch this garden during the first summer and pull out any pernicious weeds which appear, and this may be necessary every year for a month or two. Further treatment must be dictated by the needs of the place. A sandy or gravelly tract will be found best suited to a desert garden, though if soil be heavy the care may be reduced greatly, by covering the surface with sand or gravel.

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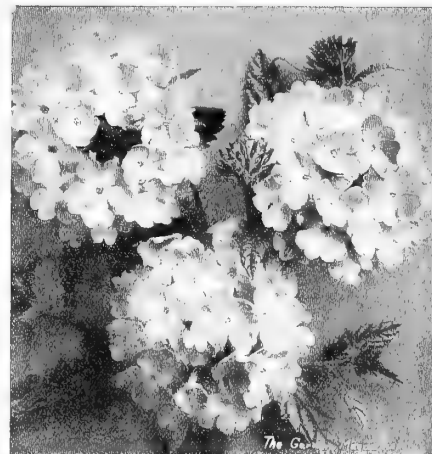
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NOVELTIES & RARITIES

Hollyhocks That Bloom the First Year from Seed

The announcement made last year that hollyhocks had been secured which would bloom the first year from seed created considerable stir in the floral world, and a season's trial of the new strain shows that although still far from perfection it is almost, if not quite, an epoch-making novelty in floriculture. The new strain has been called "Everblooming Hollyhocks" because, under the most favorable conditions, it will give a succession of flowers from July until frost. The seeds must be sown indoors from February to April, and if the seedlings are transplanted outdoors in May, they will begin to flower in July or August, depending upon how early the seed was started. A neighbor of the undersigned has even sowed seeds of these hollyhocks outdoors in May and gotten a few flowers in August. The strain is new yet and naturally contains a good many undesirable forms and colors.

These everblooming hollyhocks require the very best care or they are likely to be disappointing. The ground must be deeply and well prepared, furnished with plenty of well-rotted manure, and not allowed to suffer from drouth. It is well to mulch during the hot weather and to add liquid manure occasionally. If all these things are done, the plants will throw out side spikes from the roots as well as branches from the main spikes until growth is checked by frost. Mr. R. Charlton of Los Angeles reports that his plants began to bloom on the Fourth of July, 1904, and continued to bloom until January 13th, 1905. In the North, with good management, they should bloom for twelve weeks without cessation. The new strain is said to be entirely free from the hollyhock disease, and this immunity, which may be only temporary, is probably due to the fact that they have the vigor that seedlings from crosses usually show. The strain was created by a Russian botanist and hybridist who says that they are a cross between "*Althaea rosea* fl. pl. var. *nigra* and *Althaea ficifolia*." The latter is a European species with yellow or orange flowers, and its specific name means "fig-leaved," referring to the seven-lobed and toothed leaves which distinguish it from the common hollyhock (*Althaea rosea*), which is a native of China. Both species are biennial.

We do not advise anybody to sow seeds of the new strain outdoors in May with the expectation of getting a full crop that season.

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Every Garden may now be glorified with Queenly Hollyhocks grown as easily and flowering as quickly from seed as any garden annual!

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(We have received hundreds of other letters of similar purport.)

"I have never known such fine Hollyhocks as came from your Ever-blooming kind, the seeds of which were planted in the open ground last April. They began to flower the last of July and I had six, eight or ten spikes on nearly every plant. One CANNOT praise them enough."

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"Last year I got a package of your Ever-blooming Hollyhock seed from which the plants commenced blooming the 4th of July and are blooming yet (January 13th, 1905); in fact, look as fresh and beautiful as when they first commenced."

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There are less than thirty books to be published from now to mid-summer, and these volumes represent a selection from more than a thousand manuscripts and scores of plans suggested by others or originated by ourselves. A publisher's duty is to get the greatest possible market for each book and with that in mind the list is kept small.

No adequate account of a book is possible, we have come to think, in an advertisement; if we can stimulate an interest to see the volume, the bookseller must do the rest. But we want to reach individuals and communities where there are no booksellers and people who do not go to bookstores, *therefore* our "On Approval" system. It will be a pleasure to send any of the books mentioned to private buyers, with the understanding that they are to be paid for *after* examination and returned if not wanted. The only proviso that in remitting expense of carriage must be added on *net* books only.

Spring List 1905

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The first volume of "The Garden Library," which is a series of low-priced, practical hand-books on home gardening. Many beautiful illustrations. *Net*, \$1.00. (Postage, 10 cents.)

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A charming volume on a comparatively neglected branch of nature study. The pictures of the fifty-one species "are the orchids themselves." *Net*, \$1.35. (Postage, 14 cents.)

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A novel of the present time, by the author of "The Fugitive," giving an intimate and dramatic picture of Russian military and peasant life—a human document of great vigor. \$1.50.

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By Frederick Upham Adams

The dramatic instinct and whimsical humor shown by Mr. Adams in his successful novel, "The Kidnapped Millionaire," he has here carried into the field of golf and country sport. The story moves in language not too technical through a series of jolly situations. \$1.50.

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By Eugene P. Lyle

A dramatic love story centering about a young Confederate officer from the Middle West, who, after Lee's surrender, goes with his comrades to the court of Maximilian in Mexico. \$1.50.

It is your privilege to have sent you, free of charge, any book or books named in the preceding Spring List for examination and approval. Any one or more that you like you may keep, to be paid for at the rate of \$1 per month, if the total is \$10 or less; \$2 per month if the total is \$20 or less; \$3 per month if the total is \$30 or less, etc., etc. (A yearly subscription to **THE WORLD'S WORK** or **COUNTRY LIFE IN AMERICA** may be added under certain conditions, of which particulars will be sent on request.) Books that you do not wish to buy can be **returned**.

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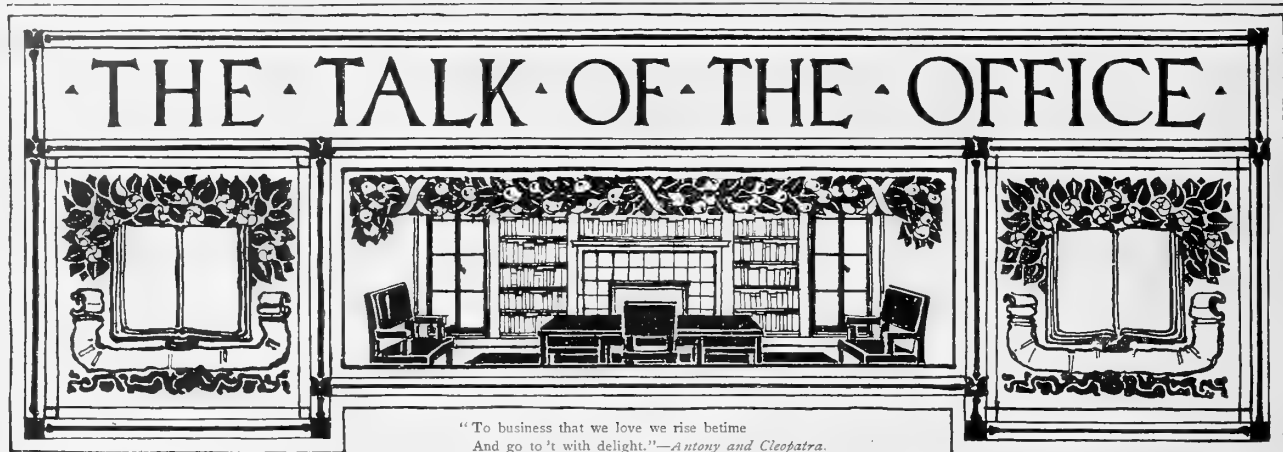
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DO IT NOW

WE wish to suggest to our readers to begin at once to keep a complete file of THE GARDEN MAGAZINE. They will find that at the end of six months or a year the numbers will be very valuable to bind. For each volume there will be a complete index, and as it is a practical magazine, in its bound form it becomes an invaluable reference work, a veritable encyclopedia of gardening. We wish to lay especial stress on this matter now, for the reason that many subscribers to our other magazines, *The World's Work* and *Country Life in America*, put off binding their magazines until the first volume was absolutely unobtainable. As it is now, the February number of THE GARDEN MAGAZINE is out of print and most difficult to find. A little later we will print particulars of a form of binding, with prices, etc.; but we wish now to caution our readers to save their copies in the belief that they will thank us for this suggestion.

AN OPPORTUNITY TO HELP

We receive scores of letters from readers who are kind enough to approve of THE GARDEN MAGAZINE, and we are glad to say that the subscription list thrives wonderfully under this kind recommendation of one subscriber to another. We especially want to ask the co-operation of subscribers to interest new readers; and we will give to any person who will secure two subscriptions to the magazine, and remit two dollars, a copy of "How to Make a Flower Garden," described in the advertising pages of this issue, or a copy of J. Wilkinson Elliott's book, "A Plea for a Hardy Garden." We will send circulars upon application, if our friends will be good enough to send us the names of any one interested.

THE GARDEN MAGAZINE COIN CARDS

We have made some most attractive cards, which hold a silver quarter-dollar, and are thus made good for a trial subscription. If you want to help us extend our subscription list send for as many of these as you can use among your friends. They will at once be forwarded, with our best thanks for your interest. Indications point to a great circulation of this card.

COUNTRY LIFE IN AMERICA

We hope every reader of THE GARDEN MAGAZINE has seen the annual March Gardening Number of *Country Life in America*. It is so far the best we have ever put forth, and we are vain enough to think, in beauty of illustration, in its practical value and in general luxuriousness, it will long be considered a model. The issue contains 150 pages and 150 important illustrations.

The April number of *Country Life in America* is hardly less attractive, though the magazine fills its broad field of the whole of out-door life. Its butterfly cover indicates one of its interesting articles. There will also be articles on "The Polo Pony and His Training" and "The Art of Pigeon Growing and Raising," and an important story in the series devoted to home building and choosing the site, by an expert architect. The second of the articles on roses, begun in the March number, will be printed in April. Ernest Thompson Seton writes on "Blazes and Signs in Trail Making." There will be a most valuable article on "Bee Keeping" by Mrs. Anna Botsford Comstock, and the usual helpful, detailed monograph on "Practical Agriculture" by Mr. H. J. Wheeler.

A year's subscription to *Country Life in America* is a year of delight, and to induce readers of THE GARDEN MAGAZINE to know its elder sister, *Country Life in America*, we make an especial offer of three months for fifty cents if sent now.

THE VEGETABLE BOOK

About April 1st we shall publish "The Home Vegetable Garden," by Edith Loring Fullerton, which we believe to be the best book on the subject for four reasons. First, it is the only American book we know of that is restricted to the home vegetable garden (most of the books on this subject are devoted chiefly to commercial gardening methods which only serve to confuse the amateur). Second, it is both practical and lively, whereas most gardening books are dull reading if they are at all practical. Third, we are sure it has more and better illustrations than any book on vegetable gardening ever published in America. Fourth, it has a planting table, which tells just what to plant early, the main

cropp, how deep, how far apart, when they are ready to eat, and all the necessary points. This table shows at a glance by columns just what to do. It is printed separately and put in a pocket, so that it may be taken into the garden along with the seeds and tools. The book will be uniform in size and illustrations with "How to Make a Flower Garden." Every one who has had a glimpse of the text and pictures is enthusiastic, and we anticipate a larger sale for this book than any book on vegetable gardening ever printed. The price is \$2.00 net, postage 20 cts. extra.

THE POULTRY BOOK

After three years' hard work we have completed a book which we believe will stand for many years as the authority on poultry. We purchased the rights of this book from the author, Mr. Harrison Weir, in England, thinking that only a slight modification would make the work suitable for American readers. We found, however, that we were practically obliged to make a complete new book, a task which we have now just completed after an expense of many thousand dollars and years of work. Our readers interested in this most important subject are invited to send for special circulars.

THE GARDEN MAGAZINE LIBRARY

We hope that the readers of this magazine will be interested in a plan which we hope to start in April for a series of small but beautiful monographs on special flowers and plants. The first volume will naturally be devoted to the most popular of all our flowers, Roses, and is written by Doctor Huey and Captain Ward, the leading amateur rosarians in the vicinity of Philadelphia and New York respectively; with an appendix on varieties for every place and purpose by Leonard Barron, Secretary of the American Rose Society.

Others are planned for Bulbs, Chrysanthemums, Rhododendrons and Azaleas, and Water Lilies. The books will be beautiful in typography, illustration, and binding.

The price will be 50 cents in paper and \$1 in cloth, both net. At this writing the first volume is just started through the press. We hope next month to give further particulars.

A Home Furnished With Books

Can you imagine a more delightful life than days spent outdoors in the Indian summer preparing for fall and winter, trimming shrubbery, raking lawns, setting out bulbs, and then indoors before the fireplace, under the green shade of the lamp, with a shelf of books at your elbow to pass away the long evenings? Talk about the simple life! But this is the well-rounded life, body and mind both alert, employed and happy.

As for the books which should be a part of the furniture of every home, here are a round dozen new ones, eight just published, and four that have already found friends. These books are especially selected for their appeal to the readers of THE GARDEN MAGAZINE. All lovers of outdoors are lovers of good books.

Making a Home The Country Home

By E. P. Powell. With many half-tone illustrations. Cloth, 12mo. Postpaid, \$1.69; net, \$1.50.

This is a practical book that no person seeking to make a home in the country can afford to be without. The book takes up the problem of establishing one's self in the country specifically under the following headings: Selecting a Homestead; Growing a House, Water Supply, Lawns, Orchard, Strawberries, Grapes, Flowers, Truck Garden, The Insects, The Animals, The Beautiful and the Useful, etc. The enthusiasm of the writer and his appreciation of all the beauties of the country make this book pleasant reading for every nature lover.

The Care of a Home The Complete Housekeeper

By Emily Holt, author of "Encyclopedia of Etiquette." Nine illustrations. Cloth, 12mo. Postpaid, \$1.75; net, \$1.60.

It gives you in a nutshell the simplest and best solution of all housekeeping problems; an A-B-C of household management for everyday use, sure to prove infinitely useful to the woman at the head of the house, whether experienced or not. Kitchen Conveniences; Repairs and Restoration; Concerning Closets; House-Cleaning; In the Laundry; Cleaning of China; Glass and Metal; Keeping Things; Four-footed Friends; Pets and Poultry; Lawn and Garden; Greenhouse, Window Gardens and House Plants; Plumbing and Sanitation; The Water-supply; Lighting and Heating; Sick-room and Nursing; Bleaches, Disinfectants and Insecticides; Healing Simplex; The Family Sewing; Plain Sewing.

Home Work Outdoors The Orchard and Fruit Garden

By E. P. Powell. Illustrated. Postpaid, \$1.68; net, \$1.50.

This second volume in the Country Home Library deals with the choice planting and cultivation of fruit, fruit-bearing trees and bushes. Every known variety of fruit that grows in America is considered. General advice as to the nature, excellencies and defects of each fruit is given, and a list of those likely to do best in various localities, with many valuable hints on cultivation.

More Work Outdoors The Flower Garden

Ida D. Bennett. Forty-seven illustrations. Cloth, 12mo. Postpaid, \$2.17; net, \$2.00.

No branch of flower raising is overlooked in this book. It is a complete guide, treating of indoor gardens—window boxes, household plants, water gardens, etc.—as well as of the usual outdoor plots. It is especially practical, clear and simple, and is full of useful suggestions out of the author's own experience. The following are some of the chapter headings: The Location and Arrangement of the Garden; Seeds; Fertilizers; Purchasing of Seeds; Transplanting and Repotting; Outside Window Boxes; Vines; Ornamental Foliage; Plants from Seed; Aquatics; The Care of the Summer Rose-bed; The Hardy Lily-bed; Hardy Shrubs and Plants for Fall Planting; Winter Protection; The Care of House Plants in Winter; Common English Names of Flowers; Blooming Season of Various Trees, Shrubs and Plants; A Chapter of Odds and Ends; A Chapter of Don'ts.

A Delightful Trip Away from Home My Friend the Chauffeur

By C. N. and A. M. Williamson, the authors of "The Lightning Conductor," and "The Princess Passes." Illustrated. Cloth, 12mo, \$1.50.

Every man and woman whose soul has felt and responded to the heart-thrabs of a motor, who knows its sighs and sobs, its little ailments and its great strength, will find that "My Friend the Chauffeur" breathes the spirit of automobilism. All those who have had experience in or hope to enjoy foreign travel, picturesque scenery, quaint towns and ancient castles, may take delight in these things under the guidance of "My Friend the Chauffeur." All those who like a good love story, well told, will enjoy "My Friend the Chauffeur."

One of the Problems of the Home The Work of Our Hands

By H. A. Mitchell Keays, author of "He that Eateth Bread with Me." \$1.50

The story is of a sweet young woman of poor family brought up in a strictly orthodox and God-fearing atmosphere who marries the son of the millionaire of her town. He is no more honest or more kind to his employees than he need be; and the drama of the story develops when the young wife uses his money to alleviate the misery of his poor mill workers, and attempts to make him realize that money is meant to assist people; not to aid in crushing them down. The strength of the story comes from the typical humanity of the characters and the truth and force of the situations.

The Home of Our Boyhood Back Home

By Eugene Wood. Illustrated by A. B. Frost. Cloth, 12mo. \$1.50.

It's a book about the way things used to be when you went barefoot with a rag around your stubbed toe. It will make you chuckle all the time; it will make you laugh out loud once in a while, and sometimes it will make a lump come in your throat and the tears come in your eyes—happy tears.

A Home of Strange People The Pang-Yanger

By Elma A. Travis, M.D. \$1.50.

The story concerns Abijah Bead and his love for Barbara Hunt, a Southern girl of deeply passionate nature and strong moral courage. A second thread enters into the plot in the shape of a woman who married Abijah secretly when he was young, and deserted him and their boy for a man whom she thought richer, trusting, to escape the consequences, to the fact that all the witnesses to her union with Abijah were dead. Abijah brings the little boy back to the village, that his resemblance to his mother shall reveal her story and be a witness to her shame. The author has developed the dramatic possibilities of this plot admirably, giving, in addition, a delightful picture of the elemental people of his Catskill community, Pang-Yanger.

The Country on Horseback The Horse in America

By John Gilmer Speed. With sixteen illustrations, two in color. Net, \$2.30; postpaid, \$2.50.

It gives a brief account of the progenitors of the horse, and then takes up every breed for which our country has been noted—Kentucky and Denmark saddle horses, Clay Arabians, Morgans, mules, thoroughbreds, etc. The chapters on "How to Buy a Horse," "The Stable and Its Management," "Riding and Driving," "Training Horses vs. Breaking Them," are full of first-hand knowledge every horse owner will appreciate. Mr. Speed is a practical horse breeder whose expert assistance has frequently been sought by the United States Government.

The Country on Foot Portfolio of Bird Portraits

By Bruce Horsfall. With notes by W. E. D. Scott. In twelve colors. In box, net, \$4.00. Separate prints 50 cents each.

Mr. Bruce Horsfall has drawn the portraits in his portfolio directly from the birds as he has observed them at large in Mr. Scott's aviary. These pictures, therefore, have an exceptional interest and authenticity which pictures of birds heretofore made, as a rule from stuffed specimens only, do not possess. The eight plates include those birds with which we are most familiar, such as the robin, meadow lark, the bluejay, the wood-thrush, brown thrasher, starling, bobolink and catbird.

Outdoor Play The Complete Golfer

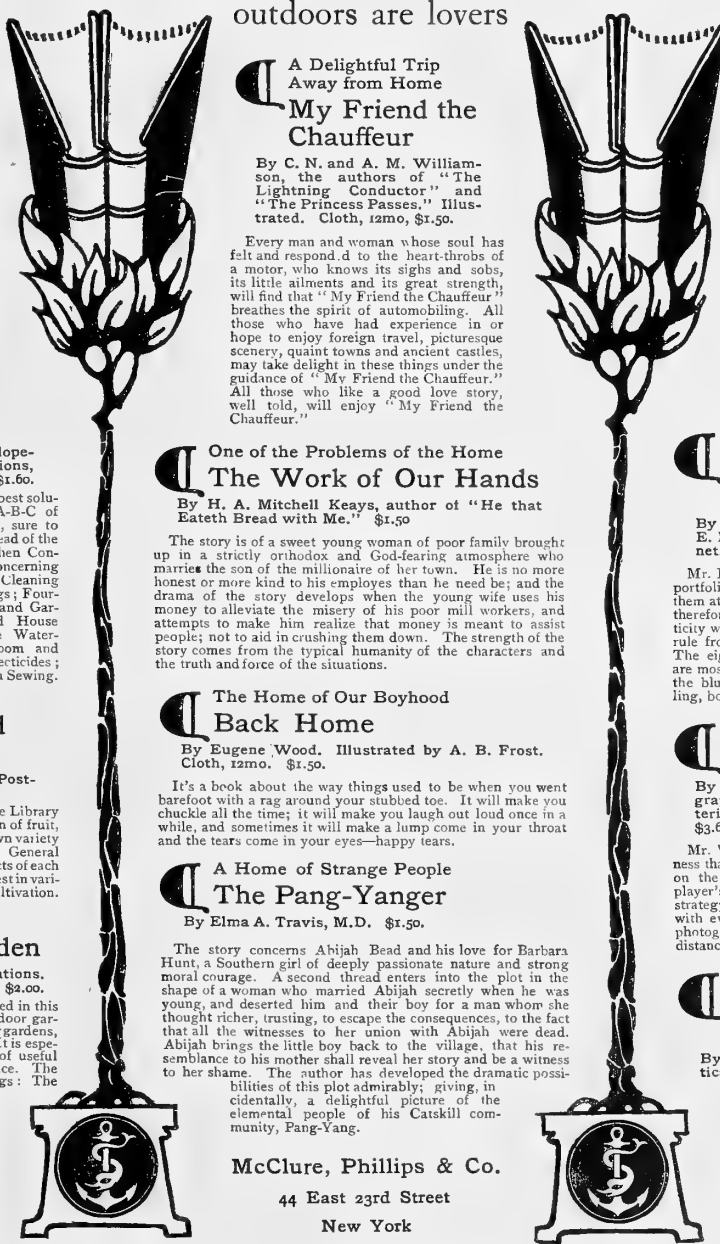
By Harry Vardon. With fifty photographs of Mr. Vardon playing characteristic strokes of the game. Postpaid, \$3.67; net, \$3.50.

Mr. Vardon goes into the subject with a thoroughness that begins with the very position of the hands on the club, and overlooks no fine point in the player's progress, from the hitting of the ball to the strategy of the game. The stance for every stroke with every club is indicated and illustrated with a photograph and a diagram of foot placements and distances between the ball, head of the club and feet.

Indoor Play Foster's Complete Bridge

By R. F. Foster, author of "Whist Tactics," with many diagrams. Net, \$2.00.

This is a complete manual on Bridge Whist by America's leading Bridge expert. It will serve as an introduction to the game for the beginner, but it also treats extensively of the finer points of play for the benefit of the more experienced. The author makes his directions for the proper leads very clear by a new and ingenious arrangement of diagrams, through which the playing of sample hands is indicated.



McClure, Phillips & Co.
44 East 23rd Street
New York

The Garden of Hardy Flowers

The rage for a few commonplace bedding plants is on the wane. Gardening with them is expensive and unsatisfactory, and the using of ten thousand bedding plants to make a poor representation of an elephant or a great man is no longer considered the perfection of Gardening Art. But there are always false gods to follow and Formal Gardening is getting an undeserved vogue, owing to the efforts of some misguided architects who are claiming that a knowledge of gardening is not necessary for garden-designing—and a few are good architects and have a large audience. There are a few good Formal Gardens in the world—we have seen one, that of Larz Anderson, Esq., at Brookline, Mass. It is magnificent and beautiful, but it is planted entirely with Hardy

Plants, and it required the expenditure of a fortune and the management of one of the best gardeners in America to make it a success. The average Formal Garden is ugly, pretentious and absurd, and expensive to maintain. **THE GARDEN OF HARDY FLOWERS** will satisfy the ambition of the richest, and is easily within the reach of the poorest. It is the loveliest and most interesting of all gardens, and arranged with

some judgment at first time would but add to its attractions, and the happy owner might go away for years and find it beautiful on his return. Such a garden is that of Mrs. Henry L. Higginson, described and illustrated in the March number of *Country Life in America*. Certainly it is the most interesting and, we think, the most beautiful garden in America, and would continue to be beautiful for many years to come without care or culture.

We have been fighting for Hardy Plants for a quarter of a century and have naturally acquired the best collection in America, and the highest skill in growing it. The following are a few of our specialties:

PRICES OF AQUILEGIAS

	PER DOZ.	100
AQUILEGIA cærulea (Rocky Mountain Columbine). The most beautiful of all Columbines; one of the most charming hardy flowers in cultivation.....	\$1 75	\$12 00
Chrysantha . Beautiful golden yellow flowers; blooms for two months.....	1 50	8 00
Canadensis (native). Red and yellow.....	1 50	10 00
Skinneri . Scarlet, handsome and distinct.....	1 50	10 00
Stuarti . Large, erect, blue flowers, pure white corolla; splendid.....	1 50	9 00
Glandulosa . Splendid dwarf variety, with lovely blue and white flowers.....	1 50	10 00
Vulgaris . Old-fashioned double Columbine.....	1 25	8 00
Assorted Varieties , our selection.....	1 25	8 00

SPECIAL OFFER OF HOLLYHOCKS

See illustration on cover, March number, COUNTRY LIFE IN AMERICA

	PER DOZ.	100
Best Large-flowered, Single , all colors mixed.....	\$1 50	\$9 00
Best Large-flowered, Double , mixed colors.....	1 50	10 00
New Allegheny . Immense semi-double flowers, with fringed edges; very beautiful.....	1 75	12 00

TRITOMAS (See illustration)

The Tritomas, which are variously known as Torch Lilies, Flame Flowers or Red-Hot Pokers, are among the most striking and decorative garden plants grown. They bloom in late summer and fall and are often seen in bloom after hard frosts when everything else has disappeared from the garden.

Uvaria grandiflora . Coral to orange flowers; strong, vigorous grower.....	EACH	DOZ.		Rooperi . Red-tipped; yellow, very lasting and brilliant; broad glaucous leaves.....	EACH	DOZ.
.....	15	\$1 50		.....	\$0 20	\$2 00
Corallina . Coral-red; very pretty and elegant.....	15	1 50		Nobilis . Similar to grandiflora, but stronger and bolder.....	20	2 00
Tucki . Salmon, fading to nearly white.....	20	2 00		Pfitzeri . New everblooming variety; blooming from July until frost.....	per 100, \$8..	15 1 50
MacOwani . Apricot; exceedingly pretty.....	20	2 00				

We have the largest, finest and most comprehensive stock of Hardy Plants in America, including three hundred varieties of the choicest Pæonies, one hundred varieties of Japanese and European Tree Pæonies including extra large specimens, and also the largest collection of Japanese Iris in the world, a great collection of Roses, Wild Species and old garden varieties, and an unsurpassed collection of named Phloxes. Our illustrated catalogue describing these and hundreds of other Hardy Plants, Trees, and Shrubs, will be sent on request.

"A Plea for Hardy Plants," by J. Wilkinson Elliott, contains much information about Hardy Gardens, with plans for their arrangement. We have made arrangements with the publishers of this book to furnish it to customers at a very low price. Particulars on request.

ELLIOTT NURSERY CO., - PITTSBURG, PA.



TRITOMAS

The Garden Magazine

VOL. I.—No. 3
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APRIL, 1905

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[For the purpose of reckoning dates, New York city is generally taken as a standard. Allow six days' difference for every hundred miles of latitude.]

How to Save Time, Worry, and Work in the Busy Season

THERE is absolutely only one way: Plan every detail before the ground is fit to work.

You will get more and better vegetables, and more fun too.

Do it evenings before April 10th.

Check off the items on this list as fast as you get them done.

INDOORS BEFORE APRIL 1ST

1. Plan the garden; draw a diagram.
2. Order seeds, plants and tools.
3. Solve the fertilizer problem.
4. Get complete spraying outfit.
5. Buy or make a hotbed.

6. Look over roots in cellar.
7. Clean and sharpen the tools.
8. Plan better vegetable and root cellars.
9. Get canning outfit.
10. Write all labels.

OUTDOORS BEFORE APRIL 1ST

11. Clean up!
12. Fertilize, roll and repair lawn.
13. Any grading or draining?
14. Prune fruit trees and grapes.
15. Train berry plants.
16. Spray fruit trees and bushes with lime-sulphur before buds open.
17. Fertilize asparagus and rhubarb.
18. Mulch strawberry bed.
19. Plant deciduous trees and shrubs.
20. Plant hardy roses.
21. Sow sweet peas.
22. Sow a few seeds of peas and corn.
23. Get pea brush ready.

OUTDOORS ON APRIL 15TH

(or whenever land is fit to work and before danger of frost is past).

24. Plow or dig the garden; rake it.
25. Sow seeds of all hardy vegetables.
26. Sow seeds of all hardy flowers.
27. Divide and replant perennials.
28. Prune tender roses.
29. Spray roses with whale-oil soap.
30. Transplant hardy vegetables from hotbed.

HOTBED DOINGS

31. Sow tender annuals before April 1st.

32. Start cannas by April 1st.
33. Harden everything in hotbeds.

WHAT NOT TO DO

Don't prune early flowering shrubs until after they bloom. If you do, you throw away a lot of flower buds.

THE "LUCKY" MAN'S GARDEN

The man of forethought will now enjoy: By April 10th, asparagus and rhubarb forced under a barrel outdoors by the aid of fermenting manure.

By April 30th, the first asparagus and rhubarb from the garden.

Parsley from the cellar window.

Radishes and lettuce from the hotbed.

Spinach, if started in January.

Pansies, violets and daisies from cold-frames.

TRY THIS MARCH 15TH

Sow the earliest varieties of peas and corn the first day frost is out of the soil. On frosty nights protect the young plants with newspapers or anything handy. Suppose you fail. What of it? It's fun, and who can't afford to lose ten cents' worth of seed? You can fail three times this season and still get peas and corn two weeks before the croakers! The chances are you will beat them by a month. The Fullertons have done this for four years without having to cover a single plant! They use the Golden Bantam corn.

Small Fruits for the Home Garden—By Peter S. Whitcomb New York

HOW TO GROW BIG, LUSCIOUS BERRIES OF THE BEST KINDS FOR HOME USE—BERRIES THAT WILL BE THE ENVY OF YOUR NEIGHBORS AND THE DESPAIR OF THE GROCER

Photographs from the Horticultural Department of Cornell University

Small fruits are the joy of the amateur gardener. They are as easy to grow as vegetables, they take little space, and they give quick results. The man who has only a city or suburban lot can hardly afford to give any of his valuable space to the culture



131. Pale Red Gooseberry. An American variety which is a special favorite in the home garden. American gooseberries are as easy to grow as currants. Good ones should be an inch long

of tree fruits. Moreover, tree fruits do not come into bearing until three to ten years from planting. The home-maker can get results the second and third years with small fruits. If there is room for tree fruits, he can plant some of the small fruits, preferably strawberries and raspberries, between the rows of trees; but this practice is not to be recommended except when it is absolutely necessary on account of limited space. The majority of people who have a little land back of the house which can be planted immediately choke it up with fruit trees, planted ten feet apart, and then grow vegetables between the trees. Nine times out of ten, it would have been better to have left out the tree fruits altogether, for they rarely do themselves justice when cramped in this way. A row or two of currants, raspberries, and a bed of strawberries, will usually give far more satisfaction than the three or four trees which the same area of ground could support. A bearing plum tree ought to have not less than a circle of soil sixteen feet across. On this same circle of soil can be grown to perfection ten currant bushes, or twelve gooseberry bushes, or a row of raspberries or blackberries twenty-eight feet long, or enough strawberries to fill the saucers of all the family for many an evening meal.

PREPARING THE SOIL

Do not be deterred from having a small fruit garden because your soil is not just what the books recommended. A lot of nonsense has been written and passed along concerning the critical tastes about the soil they grow in, of different fruits and vege-

tables. Fruits do have preferences, but they are not nearly so particular in this respect as some persons would try to make us believe. They have a comfortable way of adapting themselves to almost any kind of soil, provided it is not very rocky, nor very shallow, nor very wet. If you do not have satisfactory results with small fruits, it is much more likely to be your fault than the fault of the soil.

Whatever may be the character of your soil at first, you can usually make it congenial to small fruits by careful treatment. If the land is wet, drain it. A trench four or five feet deep, filled with stones for two feet, then covered with flat stones, and the dirt filled in, will answer. Tile drains are better. The soil ought to be full of manure. Small fruits are mostly water—sweetened water, that is all. Those strawberries we are trying to grow are over 95 per cent. water. A liberal dressing of manure not only enriches the soil, but it also helps it to hold more water. Therefore, before plowing, put on a heavy dressing of manure, two to four inches deep. Well-rotted stable manure is preferable. Plow deep. On very small areas, the manure may be spaded under, but make this “trenching” deep. In most cases, no other fertilizer will be needed, but sometimes a liberal sprinkling of lime and of ashes is beneficial. Unleached wood ashes (not coal ashes), make an excellent fertilizer to go with the manure, either before planting or thereafter. Having plowed or spaded the ground, work it up well with a harrow or iron rake, until it is mellow and free from lumps.



132. Fay currant—a standard sort which succeeds almost everywhere. How do these bunches compare with the miserable little clusters of half-crushed berries that you buy at the grocer's? (Reduced from berries one-half inch long)

CHOOSING THE VARIETIES

When you come to the point of choosing varieties—go slow. Do not make your decisions from the nurseryman's catalogue, or the agent's advice. Seek out neighbors who have grown small fruits successfully for several years. Their advice is worth a great deal to you, and it is usually freely given—contact with the soil and Nature's bounty usually makes a man generous in this respect, though he be an Old Scrooge, otherwise.

Select the varieties which have done best in your neighborhood, and which answer your purpose. Avoid novelties; cling to the standards. Remember that varieties for the home garden should be of high quality; and that, if possible, they should ripen at different seasons, giving a succession of fruit. The selection of varieties is such a local question, on account of marked variations in soil, climate, and other factors, that it is altogether unwise to recommend certain sorts for general planting everywhere. There are, however, a few of the standard varieties which are generally considered to be more cosmopolitan than others. These the home fruit grower should know about; some of them he may find to be successful in his neighborhood. Among these may be mentioned, Haverland, Parker Earle, Marshall, Gandy, Bubach, Clyde and Glen Mary strawberries; Cuthbert, Marlboro, Gregg, Early Ohio, and Palmer raspberries; Early Harvest, Snyder, Agawam, and Rathbun blackberries; Cherry, Fay, White Dutch, and White Grape currants; Downing, Pale Red, Pearl and Industry gooseberries; and the Lucretia dewberry. These are only a few of the standard sorts, which seem to do well under a greater variety of conditions than most sorts. In choosing varieties, be guided by the experience in your neighborhood, not by my advice or the advice of any other outsider.

ORDERING THE PLANTS

Order your plants now if you are to plant this spring. Order early and plant early. Late planting often causes small fruits to die or to make a poor start. Deal with a nurseryman whom you know, or who has been recommended to you by a satisfied customer. One of the most satisfactory things about the home berry garden is that the plants cost so little in proportion to the pleasure and profit they bring. In fact, most of the plants can usually be secured from a neighbor, without cost. The neighbor who is not glad to let you dig a few strawberry plants from his bed, a few suckers from his rows of blackberries and red raspberries, and a few tips from his black raspberries ought to be ostracised. If you are not planning to plant until next year, even the currant and

gooseberry plants can be propagated very easily and successfully at home. In February, take cuttings of last year's shoots, eight inches long, bury them in sand in the cellar till April, then plant them full length deep in the soil. At the end of the season you have a plant ready to set out in the garden. The expense of starting the garden is, or ought to be, very small indeed. The best strawberry plants ought not to cost over twenty-five cents a dozen; raspberry and blackberry plants sixty cents a dozen; currant and gooseberry plants one dollar a dozen. If you get plants from a neighbor, be very careful that they come only from

blackberry plants have no "orange rust" on the under side of the leaves. Order two-year-old currant and gooseberry plants; the other plants should be one year old. "Heel in" the plants when they arrive—immediately, do not delay an hour. Dig a trench deep enough to accommodate the roots, untie the bundles, dip the roots in water, spread the plants along the trench thinly, cover the roots with soil, and tramp firmly. They can stay there without harm for several weeks.

PLANTING

Plant early—just as soon as the ground is dry enough to work up mellow. Small fruit plants are hardy, and they love the cool, moist conditions of early spring. Many a home berry garden has disappointed the gardener the first year, because he delayed the planting until late spring. If possible, make the small fruit garden oblong instead of

superior bearing bushes or vines; do not be satisfied with inferior plants from unprofitable parents. Tell the nurseryman to send you No. 1 selected plants; accept no other. See that your raspberry plants have no root galls upon them; that your strawberry plants do not have diseased leaves, that your

square, as it is then easier to cultivate. The raspberries and blackberries will naturally go on one side of the area, then the currants and gooseberries, and then the strawberries, followed by the perennial vegetables, as asparagus and rhubarb. Plant the red raspberries, black raspberries, and blackberries in rows, six feet apart, and the plants three feet apart in the row. In two years, the rows will be four feet wide, unless the growth of suckers is restricted. In the home garden it is seldom desirable to plant the brambles six feet apart each way, and keep them in hills, although this is often desirable commercially. Grow them in a narrow hedgerow. Dewberries may be planted at the same distance. The first row of currants should be eight feet

133. Strawberries two inches wide can be grown at home if the directions in this article are followed. This variety is the Meade. Plant strawberries in the home garden in narrow matted rows two feet wide, with a cultivated strip between



away from the last row of brambles; the other rows of currants and gooseberries may be six feet apart, with the plants four feet apart in the row. For home use, the strawberries are best grown, in my judgment, in a narrow, matted row; other systems of planting are often more profitable commercially. Plant the first row eight feet away from the currants, with the plants one foot apart in the row. Succeeding rows may be six feet apart. If a pistillate variety is planted, it will need a pollen-bearing kind next to it. The pistillate sorts are marked P. in the catalogs. The runners should not be allowed to set over a foot away from the centre of the row. Narrow, matted rows, about two feet wide, with a cultivated strip between, are my preference for the home strawberry patch.

Line out the rows and mark the distances in the soft dirt. Carry the plants in a pail of water when planting. Plant raspberries, blackberries, currants, and gooseberries in a hole more than large enough to accommodate all the roots without twisting, filling rich, mellow surface soil around them. Plant deep;



134. The berries on the right are Gregg, one of our best black raspberries. On the left are the largest and best wild black raspberries. This improvement has been wrought in twenty-five years. The best Greggs are an inch long



135. Cuthbert—unquestionably the leading variety of red raspberry, both for market and home use. It is not of as high quality as Marlboro, but is more vigorous, hardy and productive

most amateurs err in the direction of shallow planting. Be careful to plant the black raspberry tips in the same relative position which they were when attached to the parent plant; that is, do not set the piece of old cane upright, but so that the large bud in the centre of the mat of roots will be upright. It is the bud, not the cane, which ought to grow strongest. Tramp firmly around each plant when done; but throw a little loose soil over this tramped soil before leaving, to prevent evaporation. Either before or after planting, head back the tops of the bushes or canes, one-third to one-half, unless this has been done by the nurseryman.

The strawberries are best planted with a spade. Thrust it deeply into the soil, press it forward, insert the roots into the crevice, withdraw the spade, and press the dirt firmly around the plants by springing slightly on the balls of both feet, which are placed close to the plant, one on each side. Be especially careful to plant strawberries deep, but do not cover up the crown. A little attention in the way of watering newly set plants is often very beneficial, especially if the season is dry.

CARE THE FIRST SUMMER

The first season is a very critical time in the growth of the small fruit garden. Do not neglect it. The most important thing to look after is the tillage. Use the cultivator and hoe frequently and thoroughly. Keep the entire surface of the garden stirred, not simply to kill the weeds, but more particularly to make a mulch of dry soil which will keep the soil water from escaping by evaporation. A mulch of straw may sometimes be desirable in later years, but the first year the mulch should be made of well-tilled soil. Be especially careful to stir the soil after a heavy rain, when a crust has formed. Whenever you find the surface soil crusted, you may know that much valuable moisture is escaping; break it up with the cultivator. On very small areas a stirring of the surface with an iron rake, every three or four days, will keep up the best kind of a mulch, and the weeds cannot grow. Be particularly attentive to the strawberry bed. Allow no weeds to get a start there the first season; then it will not be difficult to keep down the weeds during subsequent seasons. Tillage should not be kept up much after the middle of August, as it will cause the plants to grow late, and so be more liable to winter killing. Let the weeds grow in the fall as they will; they protect the soil during the winter.

In the home garden, irrigation may often be practised to advantage. Strawberries, above all other fruits, delight in an abundance of water. Good tillage provides water; but it may sometimes be expedient to supplement tillage with irrigation. Surface sprinkling, unless prolonged, is usually worse than useless. Let the water soak down several feet in one place before directing it to another place. Irrigate deeply, or not at all. This applies to the watering of lawns as well as to the irrigating of gardens.

Pick off all blossoms from the strawberry plants, except, perhaps, on two or three

plants, to see what you may expect next year. Let the runners set at will. In tilling strawberries, always run the cultivator or rake through the same way each time. This allows runners to set which would be uprooted by a reverse tillage. When a row is matted over two feet wide, stretch a line and chop off and hoe up all the outsiders. Keep the row at this width by frequent uprooting; let all the strength of the soil go into the plants which have already set. Keep up tillage in the space between the matted rows. If you find an occasional plant which looks sickly and shriveled, dig it up, and kill the fat, white grub which is eating its roots. This is the worm which becomes the June beetle.

When the raspberry and blackberry shoots are a foot and a half high, pinch off the ends, so as to get branched canes. Look out for currant worms. When the first worms appear, others are almost sure to follow. Pick them off. Spray the leaves with hellebore—one ounce in three gallons of water.



136. The small-fruit garden in winter. This man has made a blackberry hedge which is both ornamental and serviceable. The red stems make a cheery bit of color in winter



137. Agawam blackberries. Sometimes an inch and a half long. After tasting home-grown Agawams you will never go back to the red-tipped, fly-specked, ill-flavored blackberries which the grocer offers



138. How your strawberry bed should look a year from planting. Keep the rows narrow by uprooting all straggling runners. Have a clean soft mulch of straw to keep the berries clean and prevent the soil-moisture from escaping. Why eat sand?

Usually it will not be necessary to stake or trellis the brambles the first season.

If you desire to increase your planting of raspberries another year, "tip" some of your plants. When the canes bend down, and long, whitish ends appear, cover these firmly in the ground three or four inches



139. Haverland—one of the best all-around strawberries for the home garden. Often grows an inch and three-quarters long



140. A pot-grown strawberry. Plant these in July or August and you will get a fair amount of good fruit the very next spring, thus saving a year. They cost about ten cents each

deep. In the spring the tips will have rooted and can be cut off and transplanted.

PREPARATIONS FOR WINTER

In the fall, the small fruit garden of the Northern States must be tucked in snugly for the winter. After the ground has frozen, not before, make the strawberries comfortable with a heavy mulch of manure and straw. Straw stable manure is preferable, if it does not contain many weed seeds, which will make trouble later. Get rotted manure, if possible, as the weed seeds in it are likely to have been killed. Dress the top of the strawberry bed liberally with manure, covering the space between the rows as well as the plants themselves. Then put on an extra quilt of clean straw—the cleaner the better. If straw is not handy, use hay or leaves; sometimes cornstalks are used, but this is usually not a good practice as they frequently smother the plants. Two to four inches of this material, when packed, will keep the plants from winter injury, the amount depending upon the location of the garden.

The raspberries and blackberries require no special care at this time, except in those Northern States where the canes are likely to be winter killed. In the home garden this danger can be avoided with a little trouble. Dig out a few shovelfuls of earth from all along one side of the row and have another person push over the tops of the canes with a fork. Then cover the tips with sufficient earth to hold them down during the winter. The bent canes will not be as liable to winter injury as the canes which stand upright. In very severe climates the canes may be covered completely with soil.

Fall is a good time to put several generous forkfuls of manure around each currant, gooseberry, raspberry and blackberry bush. All small fruits are hearty eaters and their special weakness in the way of victuals is rotted manure. This manure should be worked well into the soil the following spring.

Usually it is best not to prune the berries until early spring, when danger of winter injury is past. When the raspberries and blackberries begin bearing, the second year, the fruiting canes will be cut off after the berries have been picked; but all other pruning, except the pinching of young shoots, is best delayed till spring.

The currants and gooseberries should begin to give you considerable satisfaction at the table the third year after planting; the raspberries and blackberries ought to make your mouth water frequently the second year, and be the envy of your neighbors the third year; the strawberries, if you give them a chance, will marvelously increase the number of your callers during June and July of the second year, and make your oldest boy want to be a fruit grower. As to the care of the small fruit garden in after years, which cannot be discussed in this article, it is all simple to the man who really wants to grow his own berries, and is not averse to getting his hands into the soil occasionally. Small fruits are pre-eminently adapted for the millions of home gardeners, because they are

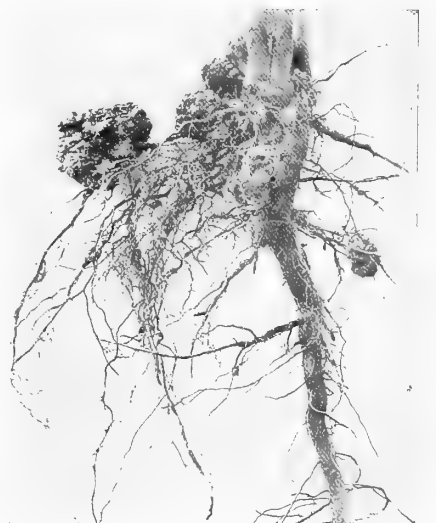


141. Orange rust—an incurable disease of blackberries. If taking suckers from a neighbor, throw away all plants with yellow spots on the under side of the leaves



142. Gooseberry mildew attacks English varieties more than American. Dust the leaves with sulphur or spray with potassium sulphide in water

easier to grow than tree fruits, and bring quick returns. The man who has only a small lot on which to satisfy his gardening instincts must decide how he can use his space to the best advantage. If the tree fruits are planted so close that they jostle each other, disappointment is almost sure to follow. This is not saying that it will not pay to try some of the tree fruits if there is room for them. But the majority of people had better give most of their ground to vegetables and small fruits. In the small home garden, a certain number of dollars, and a certain amount of industry and skill, will usually bring far larger returns when invested in small fruits than in tree fruits. If you have a bit of land about the house which ought to be earning something, try a small fruit garden. There is some profit and a world of pleasure in it if you love to see plants grow as well as I do.



143. A raspberry plant diseased with root gall. Never set out a plant with a gall on it. The whole row may become affected and there is no cure for the disease

Planting-Table for Vegetables—By E. L. Fullerton Long Island

A QUICK AND EASY GUIDE, SHOWING WHEN AND HOW TO PLANT SEVENTY-FOUR KINDS OF VEGETABLES, HOW TO CULTIVATE THEM, WHEN THEY ARE READY TO EAT, AND WHAT THEY ARE GOOD FOR—ADAPTED TO THE SMALL HOME GARDEN CULTIVATED BY HAND OR BY WHEEL-HOE

MARCH is the time to sow seeds in the hotbed, if you want to gain a month; sow in April and you may gain a fortnight. Outdoors sow seeds of a few hardy vegetables, especially peas, and even corn, on March 15th, for if they are ruined by frost it is no

matter in the home garden. Moreover, the young plants can be covered on frosty nights by newspapers or boxes. What is folly for the truck gardener is good sense for the home gardener, because he has so little at stake.

Dates for Planting.—These can never be

exact, but there is no use in being hopelessly vague. Therefore, New York City is taken as a standard. In reckoning dates, allow six days difference for every hundred miles of latitude. North, later; South, earlier. The following dates are those of an average season

ALMANAC	THE SOIL	TREES AND WEATHER	TENDER VEGETABLES	HARDY VEGETABLES
March 1st	Too wet	Trees dormant	Sow indoors	Sow indoors
March 15th	Best land fit to work	Red maple in bloom	Sow indoors	Sow indoors—risk a few out
April 1st	Plowing season begins	Trees budding	Sow indoors	Sow all early crops outdoors
April 15th	Most of plowing done	Leaves out	Sow early crop outdoors	Sow main crop: transplant early
May 10th	Weeds humping	All danger of frost past	Sow main crop: transplant early	Sow last of main crop

Tender Vegetables.—The following are injured by even a slight frost and should, therefore, not be planted until all danger of frost is past. *i. e.*, about May 1st: Beans, corn, cucumber, egg-plant, melon, okra, pepper, pumpkin, squash, sweet potato, tomato.

Hardy Vegetables.—The following, if sown outdoors, or properly hardened before transplanting from hotbeds, will endure a frost. About April 15th is the time to sow the main crop; March 15th the early crops (outdoors). Asparagus, beet, borecole, broccoli, Brussels

sprouts, cabbage, carrot, cauliflower, celery, corn-salad, cress, endive, horse-radish, kale, kohlrabi, leek, lettuce, onions, parsley, parsnip, pea, radish, rhubarb, salsify, sea-kale, spinach, turnip. (List from Bailey's "Horticulturist's Rule-Book.")

NAME OF VEGETABLE	WHEN TO PLANT		DEPTH TO PLANT S=Seeds R=Roots (inches)	DISTANCE APART when thinned or transplanted (inches)	READY TO EAT (Figures mean days)		OTHER POINTS What the Vegetables are good for. Hints on Soil, Watering, Thinning, Transplanting, etc.
	Early Crop	Main Crop			Early Crop	Main Crop	
Artichoke, Globe	March indoors	April May	S. ½ R. deeper than before	24 x 36 24 x 36	Sept. to frost	Next summer	The green scales around the flower bud are boiled and eaten with mayonnaise. When done bearing for the year, the flowering stem may be cut back to ground and shoots blanched like celery. Plant shoots and suckers deeper than before.
Artichoke, Jerusalem		April May	S. ¼ R. 2	12 x 36		Aug. to frost	Tubers may be eaten raw or cooked in various ways. Blossom, a diminutive sunflower.
Asparagus		April	S. 1 R. 6	12 x 36 24 x 48	Third year	April June	Two-year-old roots may yield some the second year. Beds last twenty years or more. In the fall cut down all foliage and burn; then dress with salt and cover with one foot manure. Cut beds lightly the first year. Sow radish with asparagus.
Basil sweet		March	¼	8 x 8		June	Just before blooming cut back to three inches. Dry the leaves and bottle. Fragrance like cloves.
Beans, Lima (on poles)	Apr. 15 outdoors	May 1	2	Hills or drills 36 x 36		Aug. to frost	Plant seed with eye down. Manure should be used only to hold moisture; bone meal and wood ashes make a good fertilizer. Seeds may be started in frames, in pots, cans or sods, to secure an extra early crop.
Beans, snap and wax (dwarf)	May to Aug.		2	12 x 24	July	45	Plant one inch apart, eye down. Late varieties bear longer than early. A deeply dug rich soil is best. Do not use fresh manure. Three or four plantings enough for a small family. Sow every two weeks for succession.
Beets	Mar. 15 outdoors	Mar. 20 to Aug. 1	1½	9 x 18	May to June	50	Soak seeds over night in warm water; this hastens germination. The "thinings" may be transplanted.
Borage		April May	¼	10 x 10		20	Young leaves used in flavoring beverages or boiled for greens. Flavor resembles cucumber. Blossom very pretty. Excellent food for bees.
Brussels sprouts		May June	½	12 x 18		150	Cultivate the same as a late cabbage. Young buds in angles of leaves are eaten. Should be touched with frost before picking.
Cabbage	Feb. Mar. indoors Apr. outdoors	May June	½	24 x 36	July	100	Ground should be very rich; liquid manure applied during August very beneficial. Late crop may be stored for winter use in cold cellars or pits.
Cardoon		May June	1	24 x 36 36 x 48		120	Roots perennial, need slight protection over winter. Leaves blanched; used like asparagus or served as a salad; bitter. When grown, the leaves must be blanched by tying, wrapping in matting or banking up. Blanching requires four weeks.

Planting Table for Vegetables—Continued

NAME OF VEGETABLE	WHEN TO PLANT		DEPTH TO PLANT S=Seeds R=Roots (inches)	DISTANCE APART when thinned or transplanted (inches)	READY TO EAT (Figures mean days)		OTHER POINTS What the Vegetables are good for. Hints on Soil, Watering, Thinning, Transplanting, etc.
	Early Crop	Main Crop			Early Crop	Main Crop	
Carrots	Apr.	June July	$\frac{1}{2}$	6 x 18	July	100	Sandy loam full of humus; dig deep. Early crop must be used as soon as large enough. Late crop may be stored in sand in cellars, or stored in pits.
Catnip		May Sept.	$\frac{1}{2}$	24 x 20		40	Young leaves used for seasoning herb. Whole plant may be dried when in blossom.
Celery and Celeriac	Feb. in hotbed	Apr. in seedbox June	Barely cover	6 x 48	As greens May	170	Two transplantings necessary from first to second seed beds, two inches apart, then into trenches in the garden where it is to be blanched. Rich soil; plenty of moisture. Celeriac a large rooted celery. Eat the root. Do not blanch.
Chards, Swiss Beet	April	May	$\frac{1}{2}$	12 x 18	June	60 to frost	A beet whose leaves instead of root are eaten. The whole leaf eaten like spinach, mixed with sorrel; or the midrib, which is white and fleshy, served like asparagus.
Chervil		Apr. June	Barely cover	4 x 12		45	Used like parsley, beautiful foliage; rather sweetish flavor. Chief ingredient of "fines herbes."
Chervil, turnip-rooted		Aug. to Sept.	$\frac{1}{2}$	4 x 12	Before frost		Root edible; treat like carrot; pull roots just before frost and store in a pit or root cellar. Cover with sand to exclude the air.
Chicory	Apr.	Apr. to June	$\frac{1}{2}$	6 x 12		100	Leaves boiled like spinach or blanched and used as salad. Roots ground, dried and used as substitute for coffee.
Chives		Apr.	R. as deep as before	12 x 12		May to Oct.	Leaves cut and used as flavoring; a delicate onion. Roots set as deep as before.
Corn, sweet	Apr. to May	June Aug. 1	1 early $1\frac{1}{2}$ late	Hills 36 x 48 Drills 24 x 48, 9 x 36	July	55 to 90	Fairly rich soil, thorough cultivation, plenty of moisture at roots for best success. Tall varieties require more room than short.
Corn-salad	Aug. to Sept.	Apr. to May	$\frac{1}{2}$	6 x 6	Next spring	60	In the fall when sown, protect with leaves or straw over winter. A good substitute for lettuce.
Cress, garden		Apr.	$\frac{1}{4}$	3 x 6		40	Good substitute for water cress.
Cress, water		Apr. to June	S. or R. in shallow water	6 x 6	June	28	Excellent for brooks. Can be grown in garden.
Cucumber	Feb. to Mar. indoors	May to July	$\frac{1}{2}$	36 x 36 42 x 60		50 to 75	Plant several seeds in an inverted sod for early crop. In hills in the garden for late. Sow six seeds to hill endwise, thin to two best plants to a hill. Thin garden plants when striped beetle has disappeared.
Dandelion		Apr.	$\frac{1}{2}$	6 x 6		Next March	Leaves boiled like spinach or blanched and used as salad.
Dock		Apr.	R. 2	10 x 10		90	Also propagated from seeds. The roots should be used like salsify and when young. Bitter. Used by Japanese. Set crown two inches deep.
Eggplant	Feb. indoors	Mar. indoors	$\frac{1}{2}$	36 x 36	July	80 to 160	Plenty of heat to start plants, then accustom them to cold before setting into garden. Rich soil and moisture needed.
Endive	Mar. indoors	Apr. to Sept.	$\frac{1}{4}$	12 x 12	June	45	Fine appetizing salad, beautiful and delicious. When thirty days up tie with raffia and blanch the heart. Do this when dry—very susceptible to rot.
Fennel		Apr.	$\frac{1}{4}$	8 x 18		20 to frost	Hardy perennial. Leaves used in salads and sauces. Sickish sweet flavor, beautiful foliage. Seed used for flavoring.
Garlic		Apr.	R. 1	6 x 12 12 x 12		Summer	Used for flavoring; very strong.
Horseradish		Sept. to May	R. 2 to 4	12 x 30		Mar. to Mar.	Roots grated and covered with vinegar, and tightly bottled. Best in rich, moist soil. Will grow anywhere.
Kale		Sept. to May	$\frac{1}{2}$	12 x 18		150	Do not sow in September, where winters are very severe. Old plants remain out all winter, freezing not injuring. Young leaves may be gathered from time to time or whole plant used at once. Heavy feeder.
Kohlrabi		May to June	$\frac{1}{2}$	6 x 12 12 x 24		115	Form of cabbage partaking of turnip's peculiarities. A large fleshy stem just above ground boiled and eaten like turnips. Cultivate like cabbage, but better not transplant.

Planting Table for Vegetables—Continued

NAME OF VEGETABLE	WHEN TO PLANT		DEPTH TO PLANT S=Seeds R=Roots (inches)	DISTANCE APART when thinned or transplanted (inches)	READY TO EAT (Figures mean days)		OTHER POINTS What the Vegetables are good for. Hints on Soil, Watering, Thinning, Transplanting, etc.
	Early Crop	Main Crop			Early Crop	Main Crop	
Lavender		Apr. to May.	S. $\frac{1}{4}$ R. as deep as before	8 x 18 36 x 36		Before flowers fade	Set roots as deep as before. Used more as perfume than as flavoring. Flowers should be dried quickly in shade. Perennial. Cover in winter with six inches of litter.
Leeks		Apr. to May Sept.	1	5 x 12		110	Thin when four inches high to one and one-half inches; transplant when eight inches high to five inches. Transplant in trench with several inches of old manure. Set plants deep as possible without covering crown and below the surrounding surface. Fill in trench as plants grow, to blanch stalks.
Lettuce	Feb. to Mar. indoors	Apr. to Aug. 1	$\frac{1}{4}$	8 x 12 12 x 24	Apr. May	21 to 65	Two distinct types; cabbage, close heading; cos, open and tall. Finely powdered rich soil necessary. Apply hen manure, or nitrate of soda when seedlings are several inches high. May be used green or dried for seasoning.
Marjoram, sweet		Apr. to May	$\frac{1}{4}$	12 x 12		30 to 120	Perennial, grown as annual. Leaves and tips of shoots used for seasoning.
Martynia		Apr. to May	1	36 x 36		65	Will not germinate until ground is warm. Seed pods used for pickling in the same manner as cucumbers. Plant in hills or seed beds.
Mint, spear		Apr. to May	R. as deep as before	6 x 6		21	Delightful, refreshing herb, much used as a sauce to accompany lamb and mutton. Needs no protection over winter. Set roots as deep as before.
Mushrooms	Aug. outdoors	Sept. to Feb. indoors	Spawn 2	8 x 8	Nov.	Dec. to Feb.	Must be grown in hot manure in the dark. What looks like the whole plant is eaten.
Muskmelon	Apr. indoors	May to June	1	60 x 60	Aug.	100	Give plenty of well-rotted manure in hills at planting. Nitrate of soda in frequent minute quantities.
Mustard	Nov.	Apr. to May	$\frac{1}{4}$			20	Sow in drills, or broadcast in a bed. Rake the bed or roll it so seed may be partly covered at least. Used in salads or boiled like spinach.
Okra	Mar. indoors	May	1 $\frac{1}{2}$	18 x 24	July	100	Young seed pods stewed, also used in gumbo soup. Extra early crop by sowing in pots or cans in March or April in the house or coldframe. Plant seeds four inches apart at first.
Onion	Aug.	Apr.	S. $\frac{1}{2}$ R. 2	12 x 20	May	100 to 160	May be raised from spring or fall sown seeds or sets. Chicken manure or nitrate of soda may be used.
Orach		Apr. to May	$\frac{1}{2}$	24 x 36		50	Used like spinach. Thin when six inches high and use thinnings. Coarser and ranker in flavor than spinach. Grows very tall when going to seed.
Parsley	Sept.	Apr.	$\frac{1}{2}$	6 x 12	May	50 to 75	Protect September-sown seed with leaves and branches over winter. Leaves used as garnish and for flavoring. Soak seeds over night in warm water.
Parsley, turnip-rooted		Apr. to Sept.	$\frac{1}{4}$	5 x 12		120	Large turnip-like root with parsley flavor. Delightful addition to soups and stews. May be stored with carrots for winter. If sown in September may be wintered over with a covering of hay or straw.
Parsnip		Apr.	$\frac{1}{2}$	6 x 18		140	Seeds do not need very rich soil; should be dug fine and deep. Roots may be left out over winter or dug just before ground freezes and stored in sand (to exclude air) in a cool room or cellar.
Peanut	Mar. indoors	Apr.	1 $\frac{1}{2}$	6 x 18		Oct.	Do not use manure in soil. Peanuts need lime, phosphoric acid and light sandy soil. The stems of the blossoms elongate, go into the ground and ripen the pods there.
Peas	Mar. outdoors	Apr. to June and in Oct.	3	6 x 24 18 x 36	May	36 to 80	Plant early kinds in double rows six to nine inches apart. Brush or wire make good supports. Use only very well rotted manure. Moisture very necessary. Plant in trench six inches deep, cover three inches and fill in as plants grow.
Peppers		Mar. indoors	$\frac{1}{2}$	15 x 24 18 x 30		140 to 150	Sweepings from a hen-house, or guano, the best fertilizer for peppers. Mix thoroughly with soil and apply again on top after plants have been set out three weeks.
Pe-tsai and Pak-choi		Apr. to May	$\frac{1}{2}$	12 x 12		40	Sometimes called Chinese Cabbage; used as salad in all ways lettuce is used. Extremely good, crisp and tender Pak-choi has a taller leaf and the midrib is used like chards and asparagus.

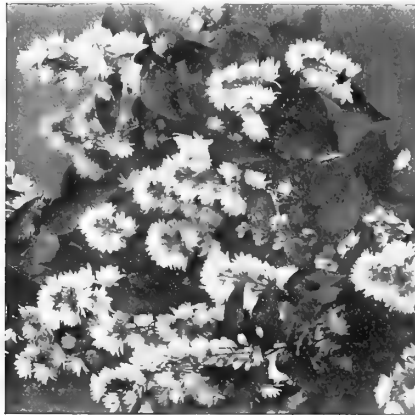
Planting Table for Vegetables—Continued

NAME OF VEGETABLE	WHEN TO PLANT		DEPTH TO PLANT S=Seeds R=Roots (inches)	DISTANCE APART when thinned or transplanted (inches)	READY TO EAT (Figures mean days)		OTHER POINTS What the Vegetables are good for. Hints on Soil, Watering, Thinning, Transplanting, etc.
	Early Crop	Main Crop			Early Crop	Main Crop	
Potato	Apr. indoors	May to June	2 early 5 late	12 x 24 18 x 36	July	100 to 130	May be planted whole or cut to one, two or three eyes. Extra early crops may be secured by sprouting eyes in a warm, light room, or starting in a coldframe. Spray vines as soon as they appear, with Bordeaux and Paris green.
Pumpkin		May to June	1½	108 x 108		120	Be sure to plant as far away from melons and squashes as possible, as they will cross-fertilize. Make the hills very rich before sowing seed.
Purslane		Apr.	¼	4 x 12		90	Used by the French as a boiled green. Grows upright, unlike the common weed of our gardens.
Radish	Feb. to Mar. indoors	Apr. to Sept.	½	2 x 8 4 x 13	20 Apr.	30 to 45	Sow in seed boxes or hotbed for early crop and every ten days for succession. The same in the garden later. Sow winter radishes in fall. Don't use fresh manure. Growth must be rapid and soil loose and fine.
Rampion		May	Scatter	3 x 3		Oct. to Feb.	A poor sort of radish. Press the seed into the soil. This is about the smallest seed known.
Rhubarb		Sept. to Oct.	R 4	24 x 43 48 x 43		May to July	Set roots into very rich soil. Cover in winter with one foot of manure. Chicken-house sweepings particularly good. Dig under in spring. Break the stems, do not cut them.
Roquette		Apr. to May	¼	10 x 12		40	A most horrible odor as well as flavor. Copious watering modifies the strong taste. Flower white, not particularly striking.
Sage		May to Sept.	R. as deep	12 x 13			Set crown of plant just above surface. A flavoring herb. To dry, cut off branches, tie in bunches and hang in sun or warm room; powder and bottle immediately. Use the green leaves all summer. Ready to dry in September.
Salsify		Apr.	¼	4 x 18		Oct. through winter	Roots very long and straight. Sometimes called Oyster Plant. May be dug and stored for the winter like carrots, or left in the ground.
Scolymus		Apr.	½	6 x 13		170	Belongs to the thistle family. Leaves very prickly, variegated. Roots used like salsify.
Scorzonera	Sept.	Apr.	½	6 x 13		190	A delicate salsify; earth should be deeply dug and finely powdered, for the roots are long and straight.
Spinach		Mar. to May	1	6 x 12 6 x 18	Mar.	30	Protect slightly over winter. Will give two or three pickings. Sow often—say ten days—for succession.
Spinach, New Zealand		May	1	12 x 24		40	Not a true spinach, but a very good substitute, growing well through the hot, dry weather; an excellent midsummer green. Soak seed in hot water over night.
Squash	Mar. indoors	May to June	1	Bush 36 x 48 Late 72 x 96	60 to 65 July	125 Aug. to Sept.	Use plenty of manure, well rotted, and give ample space. Can be planted between rows of late corn, or in hills among other early and main crops, for vines to occupy ground later.
Sweet Potato	Mar. indoors		R. 3	18 x 24 24 x 36		120 to 150	A light, warm soil, long season and good seed. Whole potato must be sprouted under glass; sprouts cut off and transplanted.
Tarragon		Apr. to May	R. as deep	12 x 12		30 to 120	Young leaves a good addition to salads; may be dried and used as seasoning. Set plants same depth. Green leaves used in making tarragon vinegar.
Tomato	Feb. to Mar. indoors	Apr. seedbed	½	36 x 48 48 x 60	July	150	Have garden ground very rich and mellow. Do not keep seedlings too warm; they should be stocky and not too tall. Plant in hotbed, seedbox, pots or cans.
Turnip	Apr.	June to Aug.	½	4 x 18 8 x 30	June	70	Round or flat; white. May be stored over winter like carrots. Much more delicate than small rutabaga.
Udo		Mar. to Apr.	Broadcast	10 x 24		Second year Nov. to Dec.	When leaves turn brown in the fall, cut off and pile two feet of earth over the roots. In about forty days the shoots will appear and be ready to cut. Used like celery. The forcing variety can be blanched in a coldframe during the winter. Ready November and December of the second year.
Watermelon		May	1	96 x 96		100	Place plenty of well-rotted manure in the hills before sowing, or plant around a sunken half barrel. Pinch off ends of vines after fruit has set. Plant seeds edgewise, eyes down, ten in a hill.

The Best Flowering Shrubs—By W. E. Pendleton New York

THE CHEAPEST AND MOST PERMANENT WAY TO GET FLOWERS—THE KINDS THAT ARE PLANTED BY THE MILLION, AND WHY THEY DESERVE TO BE

WE want shrubs on every home place in America because they furnish more flowers for less money and care and for a longer period of years than any other plants. True, some trees have big flowers and lots of them, but they are higher up in the air, while a bush is just where you can see it and smell it. Shrubs are more permanent than



144. Deutzias are the most profusely blooming of all shrubs that have small white flowers. Deutzia Pride of Rochester is the best double (five feet); *D. Lemoinei*, the best single (two feet)

“perennials” and they are nothing like the bother annuals are. You plant trees for posterity but shrubs for yourself also. You get flowers the second year, if you pay a decent price, and if you go away for a summer, the place does not look like an abandoned home. The plain truth is that a home without shrubbery is hardly decent. Shrubby is just as necessary to a place as clothing to a man. Nine times out of ten the straight line where a building meets the ground should be hidden by shrubs.

There are only three drawbacks to shrubbery. The first cost seems big. A good shrub costs half a dollar, while a perennial will cost fifteen cents or a quarter and a packet of seeds a nickel. But think of the hours of backache in tending annuals and of the years of solid comfort in shrubbery that takes care of itself! Again, the shrubs all bloom in spring and summer; only one of importance in the fall. Here again the objection is imaginary, for you have the beauty of autumn colors and of berries. (Moreover, you can plant phlox and Japanese anemone and perennial sunflowers if you want autumn flowers.) In the third place, shrubs are too easy to cultivate. There is nothing to learn about shrub culture, except pruning, and even that is simple, though most people are frightened into thinking it must be a complicated and technical subject, and consequently allow their beautiful bushes to be ruined by ignorant pretenders who treat every bush alike.

All you have to do in order to cultivate shrubs is to plow the soil or dig it to the depth of a foot or two; give it a square deal in the matter of manure; plant your bushes early enough in spring or fall so that they will feel at home before the summer drought or winter cold; hustle them quickly into the ground so that the roots are not exposed a moment longer than necessary to the sun and air; cut back the top rather severely to balance the loss of roots, and make a good job of planting such as anyone with sense should do. The rule is to plant shrubs two feet apart. If nearer, they look crowded; if farther apart, they look lonely. In two years the bushes will intermingle their branches. In five years, probably, you will want to take out bodily every other bush and move it to some other part of the grounds. You will then have six-foot lilac bushes that would cost you three dollars each at the nursery, and they will flower the very first season after you have moved them. You can always tell how deep to plant a shrub. Set it as deep as it was before or a little deeper. Put your high shrubs back and low ones front. Let the autumn leaves lie where they fall. Give the shrubby border a dressing of manure in autumn, and if you want more and better flowers than your neighbors, use some commercial fertilizer in the spring.

The very commonest mistake is to fill one's front yard with all sorts of highly colored abnormal things—variegated elder, purple-leaved plum, weeping willow, double-flowered almonds, smoke tree, cut-leaved maple, red-flowered horse-chestnut and that piercingly magenta outrage on the optic nerve—Spiræa Anthony Waterer. Often you will see all these things in one small yard. It is just as bad to cover one's lawn with such things as to

sprinkle fourteen kinds of spice all over one's food. Use native kinds chiefly, or species that fit into our landscape. The “horticultural forms” are only for accent. Don't scatter shrubs or plants of any kind over a lawn. Avoid isolated specimens. Group them. Shrubs are for the borders of a place. Don't plant one of each in a long row. You will get a much better effect by having a big solid mass of one or few things in the background, with whatever spice in front you think necessary. Don't plant shrubs in straight lines, because straight lines are not the rule of nature. If you hire a man to plant, and fail to watch him, he will surely set your plants in straight lines.

The choice of varieties is perplexing because there are hundreds of lovely shrubs, but here is a list that the beginner may tie to. It contains those good old stand-bys that are sold by the million and which are sure to give you your money's worth. First of all, the hydrangea, undoubtedly the showiest of all shrubs and the only one for autumn flowering. Its huge flower clusters are a foot long or more and when cut will last a year without water. The change of color from white to purplish, with brown and other tones, is delightful to watch. Don't plant this in the middle of the lawn, as most folks do. Put it in front of bigger bushes, so that the flowers will have a background. You can train this either into a tree or a bush. If you want the biggest display, plant two feet apart in front of other shrubbery, and cut back rather heavily every year. The showiest variety is *Hydrangea paniculata* var. *grandiflora*. The species itself has a smaller and more refined cluster and fits better into our landscape.

Lilacs are the showiest of spring-flowering shrubs and are easily first in the hearts of the



145. All flowering shrubs should have a background of trees to show off their flowers. Woods should be fringed by shrubbery, so that the trunks do not show. Plant irregularly in threes



146. An old hydrangea trained in tree form. For the biggest show, prune hard every year

three-quarters across, and of a purer white. It is also a more graceful bush; the old kind is rather stiff.

The good old-fashioned snowball that used to be in every yard is probably doomed. The aphids or plant lice cause the leaves to curl so that they lose their beauty, and the flowers are not nearly as large as they should be. People could spray them, but they won't. Its place will be taken by the Japanese snowball, which has a smaller flower, but better foliage and habit. The common snowball is a double variety of *Viburnum Opulus*. Our beautiful American high-bush cranberry is usually considered to be the same species, but some botanists think it is different enough to be called a distinct species, *Viburnum Americanum*. Anyhow, the snowball originated from the European form. It is worth while to inquire whether the American form is resistant to aphids, and if so whether we could not get a double



147. Elder—unappreciated only because it is common. Both the red and black berried species are good

people. They are about the only shrubs whose flowers are stolen; therefore don't plant them next to the street. Almost everyone plants a pink, a white, and a lilac-colored bush in a single group. Connoisseurs now believe that it is a mistake to mix the different colors and seasons of bloom. Masses of one thing give a much stronger, richer and more restful effect. Nameless lilacs ought not to be good enough for anyone who reads this magazine and takes pride in his place. Don't take the old thing in your neighbor's yard just because you can get it for nothing. There are better varieties that produce more flowers in larger clusters over a longer season. Pay twice the regular price if necessary, and get something you can take pride in as long as you live. Here are some of the best varieties; Marie Legraye, the best white; Princess Alexandria, the favorite light pink; Géant des Batailles, bluish lilac; Charles X., the best dark lilac-red; Marleyensis, the favorite lilac-red; Ludwig Späth, the best dark purple. All these are single-flowered. I would not have any double lilacs on my place. They last longer, but they are heavier and less graceful, and the bushes are usually dwarfer. I want the free, unrestrained, unconventional lilac. The double flowers hang on after they fade and look untidy. They have to be cut off. When you buy named varieties, find out whether they are on their own roots or not. If they are grafted, watch out for suckers and remove them. The lilacs that everybody grows are varieties of *Syringa vulgaris*. There are nine other species worth growing, and each has its points. None of them are troubled by the borer like the common lilacs. Everyone who can possibly afford it, should go to Boston about the third week of May and see the lilacs at the Arnold Arboretum. It is one of the best flower shows in America. Take a note-book and carry off the names of the best lilacs and other shrubs. Get something new, different, better.

What sort of a home is it that does not have a mock orange or syringa bush? Lilacs and mock orange are the two flowers that do most to fill the whole world with fragrance and make June the most intoxicating month in the year. If you want the most fragrant variety of mock orange get the old fashioned *Philadelphus coronarius*. A much showier, but less fragrant kind is *Philadelphus speciosissimus*, which has flowers an inch and

variety of the American bush cranberry which would be easier to propagate than the Japanese snowball. The only thing that keeps the Japanese snowball from rapidly supplanting the common one is that



148. The Japanese snowball seems destined to supplant the common snowball which is ruined by aphids. It has smaller clusters, but better foliage, and costs more because slower to propagate

it cannot be multiplied so rapidly as the common snowball and therefore costs more. The Japanese snowball is known to nurserymen as *Viburnum plicatum*, but it is properly *Viburnum tomentosum* var. *plicatum*. Its flower clusters are three inches across (an inch smaller than the common snowball), and it has very characteristic, deeply veined leaves which you will not forget if you see them once. They have beautiful bronzy tones in autumn. It grows eight feet high, while the common snowball will attain twelve. The single forms of both species are less showy but better for planting on a large scale in shrubberies or parks, since they are more nature-like, and because of their berries. The common snowball does not make fruit, but the single form has scarlet fruits which are beautiful from August through the winter and are not eaten by birds. Those of the Japanese species begin to color by the end of July and are most attractive in their scarlet stage before they turn to bluish black. There are twenty-six other species of *Viburnum* worth cultivating, and most of them beautiful in flower, fruit, and autumn colors.

Another huge group full of good things is

Spiræa. Aside from that magenta horror, *Spiræa Bumalda* var. *Anthony Waterer*, the three most popular species are doubtless *S. Van Houttei*, *Thunbergii* and *prunifolia*. These are all white-flowered and succeed one another in May and June. *Van Houttei's* spiræa is the bridal wreath, which I believe is the most beautiful of all spiræas. (See Fig. 149). *Thunberg's* spiræa blooms earlier and there is a hybrid of it called *Spiræa arguta* which Mr. Alfred Rehder considers the showiest of all early-blooming spiræas. The double-flowered spiræa that one sees everywhere is *Spiræa prunifolia* var. *floerpleno*.

The best bush honeysuckle for general cultivation is the Tartarian, in pink, white, and red varieties.

Personally, I have no use for weigelas, and if there is anything I dearly love to avoid it is discussions on how to pronounce and spell *Weigela* and *Diervilla*, the latter of which is now the standard botanical name. But there is no use in denying that weigelas are immensely popular and that they are the only shrubs which will flower profusely in fairly dense shade, e. g. under trees. Here is a list of varieties recommended by the Cyclopaedia

of American Horticulture: *A. Carrière*, rose-carmine, changing to red, with yellow spots in throat; *Congo*, purplish crimson; *Conquête*, deep pink; *Desboisi*, deep rose; *E. André*, dark, brownish purple; *Eva Rathke*, deep carmine-red; *Groenewegeni*, red outside, whitish within; *Gustav Mallet*, light pink, bordered white; *Mme. Coutourier*, yellowish white, changing to pink; *Mme. Lemoine*, white changing to pink; *Mme. Tellier*, white with delicate blush; *Othello*, carmine, brownish outside; *P. Duchartre*, deep amaranth; *Pêcheur fils*, violet-red; *Van Houttei*, carmine; *Steltzneri*, dark red.

There is no trouble about having enough names and descriptions to choose from. The catalogues are full of them. The only difficulty is to narrow down the list to things that are planted by the million. These are the ones mentioned above. The best list of shrubs for special purposes are those in "How to Make a Flower Garden."

Don't prune your shrubs before they blossom! Do it after! If you prune your shrubs in April you will cut off a lot of flower buds. Wait for the article on pruning shrubs in THE GARDEN MAGAZINE. It will appear in plenty of time.



149. The bridal wreath, most beautiful of all spiræas (*S. Van Houttei*). Don't let an ignorant laborer cut off all these beautiful, long, arching sprays. He wants to do it to "give the bush some shape!" Don't prune any shrub before flowering, or you will sacrifice flower buds. Wait for an article in this magazine

Planting-Table for Flowers—By Leonard Barron New York

FOR the purpose of reckoning dates, New York City is generally taken as a standard. Allow six days' difference for every hundred miles of latitude.

DATES FOR PLANTING

January 15th.—Sow indoors tender annuals and biennials which are to be treated as annuals.

February 15th.—Successional sowing of biennials and annuals indoors.

March 1st.—Sow all kinds indoors.

March 15th.—Sow sweet peas outdoors.

April 1st.—If ground is free from frost, sow hardy annuals in the garden.

April 15th.—Sow all hardy seeds outdoors.

May 1st.—Sow more seed of hardy annuals in the garden. Risk first tender annuals.

May 15th.—Sow all tender annuals outdoors. Plant out from indoors and complete the garden.

June 1st.—Plant out bedding stock, cannas, and other subtropical plants.

September 15th.—Sow sweat peas and other hardy annuals outdoors.

How to Make a Flower Bed.—Dig the soil a foot deep at least. Use plenty of well-rotted manure. If the soil is very wet, dig out two feet deep and put in a layer of stones, clinkers or broken crockery. Annuals want all the sun they can get.

How to Get Early Flowers.—You may

gain a month by starting flowers indoors in boxes. The March number of THE GARDEN MAGAZINE has a lot of pictures that show just how to do it.

Small Seeds.—Rake the surface perfectly smooth. Use the back of the rake. Sow the seed; don't cover it, tread it in, or press it with a board.

How to Water Plants.—Soak them thoroughly. Don't dribble. Water at night. Next morning rake the ground. Don't let a crust form.

Tender Annuals.—These will not endure early frost in spring; balsam, castor oil, gourds, morning glory, nasturtium, petunia, cosmos, portulaca.

NAME OF FLOWER	WHEN TO SOW		DEPTH TO PLANT (inches)	HOW FAR APART when thinned or transplanted (inches)	WHEN THEY FLOWER		NUMBER OF WEEKS IN BLOOM	COLOR OF FLOWERS	HEIGHT (feet)	OTHER POINTS Hints on Soil, Watering, Transplanting, etc.
	Indoors	Outdoors			Early Crop	Main Crop				
Alyssum, sweet	Mar.	Apr. Sept.	½	6	July	Aug. to Sept.	20	white	½	Sept. sown will bloom May. Keep flowers cut and they bloom six months.
Aster, China	Feb. Apr.	May	½	18	July to Aug.	Sept. to Oct.	6	blue, red, white	1	Don't overfeed or plants will get disease. Try wood ashes to control disease.
Balsam	Mar.	May	½	12	May	July	8	red, white, pink	2	For largest flowers cut off side shoots and grow to single stem. Likes water.
Calendula, Pot Marigold	Mar. Apr.	Apr.	½	8	June	July to Oct.	12	orange-yellow	1	Impossible to fail. Self sows. Flower heads used in soups. Can sow Sept.
Carnation (Margaret)	Feb.	Apr.	¼	6	July	Sept.	2	pink, red, white, var.	¼	Florists' carnations, survive one winter. Margarets best for garden.
Candytuft		Apr. July	¼	6		June to Sept.	4	red, white	½	Excellent for limestone soils. Don't transplant. Best low annual for rocks.
Castor oil	Mar. May	June	2	36 x 72				insignificant	2 to 8	Grown for tropical foliage effect. Don't disturb roots in transplanting.
Coreopsis	Mar.	May	¼	10	June	Aug. to Nov.	12	brown, yellow	1 to 2	(<i>Calliopsis elegans</i>) Includes best brown flowers in cultivation. Self sows.
Cornflower		Apr. May	¼	4 x 6		June to Sept.	8	deep blue	1	Cut flowers young; they grow larger in water. Best of dwarf blue annuals.
Cosmos	Feb. Apr.	May	¼	18 x 24	Aug.	Oct. to Nov.	8	pink, white, yellow	4 to 10	Get early varieties, start indoors. Plant out deeply. Tie to chicken wire.
Evening Primrose (Lam'k)	Jan.	Sept.	¼	18 x 24	Aug.	June, next yr.	6	pale yellow	1	(<i>Enothera Lamarckiana</i>) Opens at dusk. Fragrant. Flowers 4 to 5 inches.
Forget-me-not		Apr. May	¼	4	Next May	June to Aug.	8	pale blue, white	½	Naturalize along brooks. Will grow in gardens. Water and partial shade.
Four o'clock	Feb. Mar.		¼	36	Aug.	Aug. to Oct.	12	white, yellow, carmine, var.	2 to 3	Shrubby, but grown as annual. Sometimes self sows. Roots kept in cellar.
Foxglove	Jan.	May	don't cover	18	Aug.	July next yr.	4 to 8	pink, white	2 to 4	Best results by sowing gloxinia-flowered strain in fall in a frame.
Gourds	Mar.	May	¼	6				fruits: green, yellow, white	10 to 30	Grown for curious fruits. Train on trellis or arbor. Treat like squash.
Hollyhock	Feb.	June	1½	12	Aug.	July, next yr.	12	rose, maroon, yellow, white	4 to 7	Cut main growth after flowering. Ever-blooming strain flowers first year.
Larkspur (annual)	Feb.	Apr. Sept.	½	6 x 18	June	July to Oct.	16	red, blue, wh., pink, yel.	½ to 2	Keep flowers cut. Slow to sprout; better sow in fall.
Lavatera	Jan.	Apr.	⅛	18	July	Aug. to Oct.	6	white	3	(<i>L. trimestris</i>) Mallow family. Flowers four inches across.
Lobelia cardinalis	Aug.	Apr.	¼	4	Next July	Aug.	4	carmine	¾	Cardinal flower. Best in deep, moist well-drained soil; e. g., brook side.
Lobelia Erinus	Feb.	Apr.	¼	6	June	Aug.	8 to 12	white, blue	½	Best blue-flowered, low-edging plant. Common in parks. Will stand manure.

Planting Table for Flowers—Continued

NAME OF FLOWER	WHEN TO SOW		DEPTH TO PLANT (inches)	HOW FAR APART when thinned or transplanted (inches)	WHEN THEY FLOWER		NUMBER OF WEEKS IN BLOOM	COLOR OF FLOWERS	HEIGHT (feet)	OTHER POINTS Hints on Soil, Watering, Transplanting, etc.
	Indoors	Outdoors			Early Crop	Main Crop				
Love-in-a-Mist	Feb.	Mar. Apr.	$\frac{1}{8}$	6	May	July to Sept.	16	white, yellow, blue, brown	1 to 2	Profuse, finely cut foliage, good to mix with other cut flowers. Self sows.
Lupine	Jan.	Mar.	$\frac{1}{2}$	3 x 6	June	July	4	white, blue, yellow	$\frac{1}{2}$ to 5	Lime hater. Great range colors. Pea-like flowers in clusters like wistaria.
Marigold	Feb. Mar.	Apr. May	$\frac{1}{4}$	12	June	Aug.	8	light yellow, orange, brown	$\frac{1}{2}$ to 2	Early plants which flower in pots before planting never stop till frost.
Mignonette	Feb. Mar.	Apr. Aug.	$\frac{1}{4}$	6	May to July	July to Oct.	3 to 4	greenish	1	Make sowings for succession. Does not transplant well. Last sowing for winter.
Morning-glory	Feb. Apr.	May	1	4	July	Aug. to Oct.	10	blue, red, white, var.	15 to 30	Best vine for trellis. Soak seed in warm water. Self sows. First frost kills.
Nasturtium	Mar. Apr.	May	1	10 x 12 12 x 36	June	July to Oct.	8 to 10	scarlet, yellow, maroon	1 to 5	Thin dwarf kinds best on thin soil. Dies at first frost. Leaves as salad.
Nicotiana	Feb.	Apr.	$\frac{1}{8}$	12	July	Sept.	6	white, red	4 to 6	<i>N. affinis</i> white; new hybrids, red to violet. <i>N. sylvestris</i> very bold. Good.
Pansy	Jan. Feb.	June July	$\frac{1}{8}$	6 x 12	May to June	Sept. to Oct.	6 to 8	purple, blue, white, yellow	$\frac{1}{2}$ to 1	Aug. sown flowers May. Protect slightly for winter. Best early bedding plants.
Petunia	Mar. Apr.	May	don't cover	12 x 12	May	Sept.	10	magenta, white	1 to 2	Ordinary type flowers profusely all summer. Thrives anywhere. Self sows.
Phlox, annual	Feb.	Mar. May	$\frac{1}{8}$	4 x 6	May	July to Aug.	4 to 12	white, red, yellow, maroon	$\frac{1}{2}$ to 1	Best dwarf plant, for general purposes. Self sows. Makes good pot plant.
Pink, China " Japan	Feb. Feb.	Mar. Apr.	1-16	6 x 12	May	Aug.	4 to 6	white, rose, maroon	1	Showy; 3 inches across with curious mixture of colors. Stands cold, not wet.
Poppy " California		Mar. May	$\frac{1}{8}$	8	June to July	Aug. to Sept.	3 to 4	pink, scarlet	$\frac{1}{2}$ to 1	Delicate colors in Shirley strain. Don't transplant. Most brilliant red annual.
Poppy, Iceland	Jan.	Apr.	$\frac{1}{8}$	8	June	Aug.	3	yellow, white, orange	1	Sept. sown flowers May. Small flowers. Good for greenhouse in March.
Poppy, oriental	Sept.	Apr. May	$\frac{1}{8}$	36	July	Sept.	12	scarlet	3	Bold perennial. Divide plants May or Sept. Flowers 8 to 10 inches across.
Portulaca		June	don't cover	66		July	12	white, red, magenta	$\frac{1}{2}$	Germinates in hot weather. No use to sow early. Can transplant in flower.
Rocket	Aug.	Apr.	1-16	12	May	Aug. to Sept.	6	white, flesh, purple, red	1 to 3	(<i>Hesperis matronalis</i>) Grows in old brickwork. Can sow seed as gathered.
Salpiglossis	Feb.	Apr.	1-16	6	June	July to Sept.	10	variously colored	2	Always in flower. Curiously mixed and striped colors. Grow alone in beds.
Salvia splendens	Feb. Mar.	June	$\frac{1}{4}$	18 x 36	June	Aug. to Oct.	12	scarlet	3	Get early and dwarf strains. Sunshine or shade. Plant with green backgr'nd.
Scabiosa	Jan. Feb.	Apr.	1-16	4		July to Aug.	4	lt. rose, crim., blue, pur., wh.	1	Sow every month outdoors. Good for cutflowers.
Schizanthus	Jan.	Apr.	$\frac{1}{4}$	6	May	June to Oct.	6 to 8	violet or lilac and yellow	2	Sept. sown makes good pot plants for flower. Don't crowd. Use wood ashes.
Snapdragon	Feb. Mar.	Apr. May	$\frac{1}{4}$		May	July to Aug.		red, white, yellow	1 $\frac{1}{2}$	Wants rich, well-drained soil. Sept. sown seed, protected, flowers in May.
Stock, ten-weeks	Mar.	May	$\frac{1}{4}$	12 x 12	June	July	10	pink	1 $\frac{1}{2}$	Don't transplant. Very fragrant at evening. Pinch out leading shoot.
Sunflower	Apr.	May	$\frac{1}{2}$	24 x 48	July	Aug. to Oct.	6	yellow	2 to 10	Tallest growing annuals. Seeds good for chicken feed.
Sweet pea		Apr. June	3	4 x 24		July to Oct.	4 to 8	white, scarlet, blue, yellow	4 to 6	Sow early and cut flowers. Sept. sowing gives strong vine. Trench deeply.
Sweet William	Mar.	Mar. April	1-16	6 x 6	June	July to Oct.	3	maroon, blue, white, pink	$\frac{1}{2}$ to 1	"Cluster-flowered pink." Very fragrant. Likes moist, rich soil.
Verbena	Feb. Apr.	Mar.	$\frac{1}{4}$	10 x 15	May	June to Sept.	8	red, blue	1	Grand for pegging down in beds. Always in flower. Often frag. from seed.
Zinnia	Mar.	Apr. May	$\frac{1}{2}$	6	June	July to Nov.	12 to 15	red, scarlet, yellow, mag.	1 $\frac{1}{2}$ to 2	Gorgeous, bushy; always in flower. Get selected strains for pure colors.



150. Plume poppies (*Bocconia cordata*), globe thistles (*Echinops*), and hollyhocks



151. The best tall, double, yellow-flowered perennial, *Rudbeckia Golden Glow*

The Best Tall Perennials—By Thomas McAdam New Jersey

HARDY PLANTS THAT GROW HIGHER THAN A MAN EVERY SEASON—THE BEST LUSTY HERBS FOR BORDERS, SHRUBBERIES, LAWN SPECIMENS, WILD GARDENS, AND BOG GARDENS—PLANTS THAT ANY ONE CAN GROW

EVERYBODY knows that a "hardy perennial" is a plant that dies down to the ground every winter like a peony and comes up again in the spring for an indefinite number of years; and most people know that there is a bewildering assortment of them, ranging in height from two inches to three or four feet. It is a surprising fact that there are barely a dozen first-class perennials that normally grow as high as a man and are suitable for the back of a hardy border.

The best plants for the back of a hardy border are single hollyhocks. They have by far the greatest range of color of any tall, hardy herbs. I like them better than double hollyhocks, even if their flowers do not last as long. They are hardier and more permanent than double hollyhocks. A serious drawback is the disease—a rust. Every leaf must be burned. Spraying is a nuisance and can be avoided if you get seed from healthy plants and grow them on land where no diseased hollyhocks have been. Hollyhocks are biennial and bloom the second year, after which single hollyhocks will sow themselves year after year all over the garden. The new everblooming strain actually will bloom the first year, although this seems impossible. If seeds of this strain are sown indoors in March or April, and the young plants set out in May, they will begin to bloom in July or August, and will continue to do so until frost, provided they have all the food and water they can use. The strain is new and far from perfect, the plants being shorter and the spikes looser.

Second rank I should give to the plume poppy (*Bocconia cordata*), a stately Japanese plant, with flowers that have no resemblance to poppies save such as botanists may detect. The blossoms are small, pinkish white, without petals, and borne in great, fluffy masses high above the foliage. It is pleasant to

watch these plumes of flowers change to plumes of seeds. The leaf has the same glaucous hue and texture as blood-root and is similarly lobed. The plant spreads rapidly by means of suckers. Each one of these, when detached, will make a good plant the same season.

Golden Glow is much less refined than *Bocconia*, but outranks it in popularity. It multiplies faster, I believe, than any other desirable border plant, and it will give more flowers of its size, color, and season than any other perennial. It has a double yellow flower about two inches across, which lacks symmetry. The flower has only one color and shape, the plant has to be staked, and of late years the red plant-lice have got after it.

Fourth honors go to the giant reed (*Arundo Donax*), the best tall, hardy, ornamental grass. It is no trick to make it grow eight feet high and I have seen it sixteen. The books say it attains thirty feet, but I don't believe it does in this country. Its plumes of reddish flowers, like corn tassels, are sometimes cut off by frost before they have a chance to develop, but that is no matter, as people grow it for the bamboo-like grace of its stem and leaves. I have often tried to get a big stock of this by growing it from seed, but have never succeeded. They say that if you will lay the canes in damp moss in winter, nearly every joint will sprout; each joint can then be severed, potted and will make a new plant. The giant reed is a magnificent plant for lawn specimens and for the margins of water gardens.

Another tall grass of the same sort is Ravenna grass (*Erianthus Ravenna*), which seems to flower earlier and to be better adapted to damp ground than to the garden. The plumes of both species may be used for winter bouquets.

The Scotch thistle is the most striking of

all the tall, gray-leaved plants, and when it is allowed to grow six feet high and bear its royal purple flower heads, it is nothing short of splendid. There is no danger of any biennial plant becoming a pest in this country, as it can be hoed out the second year any time before it flowers. In order to get it, you may have to send to European seedsmen for seeds of *Onopordon Acanthium*. It is far less prickly than our common thistle. After flowering it gets shabby.

Joe-Pye weed would be a stunning plant if its flower clusters were only a purer and brighter pink. As the purplish-pink flat clusters fade, they look rather dirty and dissipated. But, in its place, Joe-Pye is unrivalled. Every one has seen it at its best, when growing by the waterside and reflected in the lake. Few gardeners would concede this plant a place in the background of a hardy border. I believe its best color is developed in the open, but it grows tallest just within damp woods. Of course, it prefers wet soil. It improves much in cultivation and great masses of it are very effective in wild gardens.

The oddest flowers of them all are the globe thistles, which are known for their silvery-white stems, handsomely cut leaves, and blue, globular flower-heads of peculiar structure. Sea-hollies, those strange plants with foliage of a metallic-bluish cast, belong to the "same breed of cats," from the gardener's standpoint, though the globe thistles are composites, while the sea-hollies or eryngiums belong to the carrot family (*Umbelliferae*). The two groups are often associated in gardens and are sometimes used for perpetual bouquets. They are particularly attractive to bees. The best globe thistle is said to be *Echinops Ritro* var. *temujolius*, known to nurserymen as *Echinops Ruthenicus*, but *E. sparocephalus* is taller.



152. HOLLYHOCKS HAVE MORE COLORS THAN ANY OTHER TALL PLANTS IN THE HARDY BORDER.



153. The graceful sunflower (*Helianthus orgyalis*). Small yellow flowers in loose spikes three or four feet long. Notice the narrow, arching leaves

Buckwheat has two big brothers known as giant knotweed and sacaline, which are grown for their general lustiness and not for their flowers. The giant knotweed (*Polygonum Sieboldii*, but known to the trade as *P. cuspidatum*), sometimes grows only three to five feet high, but will grow much higher. It produces "clouds of bloom," as Professor Bailey says, and is a "very effective plant for bold mass effects." Sachaline (*P. Sachalinense*) often grows ten or twelve feet high, and it is worth while to let its reddish stalks stand all winter. It spreads rapidly by runners—too fast for a border—and is a coarser species with less beautiful flowers, but "for planting in rough places where a thick cover is required," says Professor Bailey, "it is one of the best of all herbaceous perennials."

The compass plants are another interesting set of big fellows. Some of them are the resin weeds of the prairies. I like best the great *Silphium perfoliatum*, also called cup plant or Indian cup, presumably because of the way the leaf bases come together in opposite pairs to form a sort of cup. They are something like sunflowers, but coarser and less showy. I presume *S. perfoliatum* is the compass plant of Longfellow's poem.

Perennial sunflowers? Certainly. There are a dozen of them worth cultivating and none of them are as coarse as the common annual sunflower, with its huge flower sometimes a foot across. Its seeds are fit for chicken feed and oil. At the other extreme from this is the graceful sunflower (*Helianthus orgyalis*), worth growing for its foliage alone. It has narrow, drooping leaves, grows ten feet high, and has small, pale-yellow flowers scattered along spikes sometimes four feet long. It has a brown disk and grows on the dry prairies from Nebraska westward. Buy this plant this year. You will never regret it. Another pale-yellow sunflower is *Helianthus giganteus*, which grows in wet ground from Canada to Florida and west to Nebraska. It has flowers two or three inches across, with numerous rays (twelve to twenty), and its variety *subtuberosus* is known as the Indian potato. Maximilian's sunflower (*H. Maximiliani*)

is probably the western representative of this species, and differs in having deep-yellow flowers an inch and a half across, with fifteen to thirty rays. It usually grows two to four feet high, sometimes ten. The coarsely serrate sunflower (*Helianthus grosse-serratus*) is an eastern and southern species with yellow flowers an inch and a half across. In the wild it has forms that run into *Helianthus giganteus*. The Jerusalem artichoke is a mighty grower, and sometimes becomes a nuisance in the border. Its tuber is a poor substitute for the potato, and domestic animals eat it out West, but I have seen it fetch a high price in the fancy grocery stores in New York in the dead of winter. All these sunflowers bloom from August to October.

OCCASIONALLY SIX FEET HIGH

The following are among the best perennials that do not normally grow as tall as a man, but may do so under the most favorable conditions:

Larkspurs, the most beautiful of tall blue flowers.

The American Turk's cap lily (*Lilium superbum*), the best tall, orange-red lily. A swamp-loving species, excellent for naturalizing in meadows where the grass is not mown.

The giant daisy (*Chrysanthemum uliginosum*, but known to nurserymen as *Pyrethrum uliginosum*). It blooms the first year from seed. Needs moist soil. Suffers greatly from drought.

Physostegia Virginica, var. *alba*, which has graceful spikes of flowers something like heather borne in great quantities from the middle of June until frost, if not allowed to go to seed.

Any species of rheum that you can buy from a nurseryman. They have the largest leaves of any perfectly hardy perennials and their huge flower clusters are interesting and striking objects.

Black cohosh (*Cimicifuga racemosa*), with



154. The plume poppy (*Bocconia cordata*), with gray leaves something like those of bloodroot and feathery masses of small white flowers, which are also beautiful in seed



155. The obedient plant (*Physostegia Virginica*). The flower stays in any position it is turned, to right or left. Sometimes grows six feet high. Flowers an inch long, purple, pink, lilac or white.

beautiful decomposed leaves and feathery masses of white flowers in racemes sometimes a yard long. Needs partial shade.

Strong-glowing plants of the carrot family make very bold and striking objects for lawn specimens and for bog gardens. *Heraclium giganteum* and *Archangelica hirsuta* are two representatives of this remarkable type of vegetation which can be procured from nurserymen. These giant parsnips should not be allowed to go to seed, or they may spread too much.

DIRECTORY OF TALL PERENNIALS

BEST FOR THE BORDER

Omitting the coarsest things, which are better for the wild garden

Six-footers

- | | |
|----------------------------|---|
| Single hollyhocks | <i>Helianthus orgyalis</i> |
| <i>Bocconia cordata</i> | <i>Arundo Donax</i> |
| Rudbeckia Golden Glow | <i>Echinops Ritro</i> , var. <i>tenuifolius</i> |
| Not Normally Six Feet High | |
| Larkspurs | <i>Physostegia Virginica</i> , var. <i>alba</i> |
| Giant daisy | |

BEST FOR THE WILD GARDEN

Natives—Six-footers

- | | |
|----------------------|-----------------------------|
| Joe-Pye weed | <i>Silphium perfoliatum</i> |
| Perennial sunflowers | |

Natives—Not Normally Six-footers

- | | |
|-----------------------------|------------------------------|
| <i>Cimicifuga racemosa</i> | <i>Physostegia Virginica</i> |
| Not Native to United States | |
| Scotch thistle | Sachaline |

BEST FOR THE BOG GARDEN

- | | |
|--|-----------------------------|
| Damp soils, the edges of streams, ponds, water-lily basins, etc. | |
| Ravenna grass (<i>Eriarthus Ravennae</i>) | <i>Helianthus giganteus</i> |
| Joe-Pye weed | <i>Lilium superbum</i> |
| | Giant parsnip |

BEST FOR SHRUBBERY

All the things that are too coarse for the border, especially the autumn-bloomers, since there are no autumn-blooming shrubs, save witch-hazel.

- | | |
|-----------------------------|---------------------|
| <i>Hel. grosse-serratus</i> | <i>Arundo Donax</i> |
| Jerusalem artichoke | <i>Heraclium</i> |

Planting the Home Fruit Garden—By S. W. Fletcher Cornell University

Photographs by the author

AFTER the home-maker has decided the important points involved in laying out his fruit garden, and settled upon a general plan of the garden, he is confronted with other equally important problems in the planting of his fruit. Such questions as what kind of trees and plants to buy, where to buy them, and how to do the planting, can only be answered intelligently by the individual home-maker. The succeeding paragraphs aim only to give what general experience has found to be desirable in most cases. Each man must decide for himself whether this general practice is applicable to his own conditions.

WHERE TO BUY THE TREES AND PLANTS

Buy the trees and plants of the nearest reliable nurseryman, for several reasons. The stock is more likely to be adapted to the conditions of climate and soil under which you are to grow it. There is a saving in freight. The trees are out of the ground a shorter time, and therefore the roots are less likely to dry out. Then again you have the opportunity of visiting the nursery and examining the stock before buying it. The local dealer, however, has fewer varieties than the specialist. For choice varieties of pears, for instance, you must go to one of the big general concerns.

Of course it takes time, but it is time well spent. I have a kindly feeling for the ubiquitous tree agent, with his suave but

unreliable advice, and his wonderful colored pictures of "the finest fruits in the country," because he has carried fruits to thousands of homes which otherwise would have had



158. Before pruning. A three-year-old, two-year-old, and one-year-old Baldwin apple tree. For the home orchard the three-year-old tree is usually best, but if you buy a yearling you can start the head where you wish

159. After pruning. Try not to leave two branches nearly opposite; they will make a bad crotch later. Remember that these are the "scaffold limbs," which are to support all the weight of the bearing part of the tree

none. But the tree agent's fruits, though glowing and alluring in the order-book, often ripen into insipidness and disappointment. The tree agent has injured nearly as many home orchards as he has blessed. Was it not he who advised us to plant apple trees fifteen feet apart? Was it not he who sold you varieties "just as good" as the standard sorts you desired? Every year he has a new variety, much better than any other, for all purposes, and he gravely advises you to plant of this very largely. Right here is a chance for the home fruit-grower to save himself much disappointment. In general, it is safer to deal direct with a reliable nurseryman than with an agent, unless you are personally acquainted with the agent and have confidence in his judgment.

Usually, it will not pay the home fruit-grower to try to propagate his own stock, except, perhaps, the small fruits. The best nurserymen now take special pains to select and propagate the best stock. The nurseryman can also propagate cheaper than you because he does more of it; and better, because he is more skilful—it is his business. But there is a great pleasure for the amateur in multiplying plants, and if he has time enough to devote to it, and suitable conditions, there is no reason why he should not grow just as good trees as the nurseryman.

THE WRONG PLACE FOR ECONOMY

Buy the best trees and plants that you can get. Do not be led into the false economy of purchasing second- or third-class trees and plants. It does not pay. If you are about to plant an acre of orchard, the

saving by buying second-class stock will rarely amount to more than two or three dollars. The most critical period in the growth of a fruit tree, bush, or plant is the first year, and it is therefore better to pay a few dollars more for the sake of getting strong trees and plants that are sure of making a good start if given a chance. Smaller trees often catch up to the larger in a few years, but the risk is greater. Get first-class stock for the home fruit garden, always. The price of trees is nothing compared with the value of their product.

A first-class fruit tree is one that is healthy, well grown, of medium size, free from injurious insects and diseases, and having the characteristic habit of growth of the variety. Other things being equal, the medium-size trees are better than the very large trees; but in buying from a nurseryman it is safer to get his largest trees of the desired age. The same is true of the small fruits.

Buy selected trees and plants. There is a great difference in plants. It is not enough to have a tree or bush or vine which will simply bear fruit of the desired variety; you want it to bear fruit of very high quality for that variety. The farmer saves seed from his best corn plants; the florist takes cuttings from the plants that blossom best; the gardener saves seed from his best melons—why not get fruit plants for your garden that have been propagated from exceptionally good bearing trees of the varieties you wish?

Do not be satisfied with the ordinary run of nursery stock, much of which has been propagated for years from other nursery stock or from inferior trees. It pays to select



160. First-, second-, and third-class trees of Early Crawford peach. The difference in cost is three cents. Is economy worth while?



156. The box of plants as it comes from the nurseryman. The trees are packed in moss and straw. Open it at once, untie the bundles, and heel-in the plants outdoors or in the cellar. Keep roots covered



157. A six-dollar assortment for the home fruit garden—apples, pears, plums, cherries, peaches, currants and grapes; forty-five plants. Be careful not to lose or mix the labels. As soon as the trees are planted take off these small wire labels—they soon cut into the tree—and put on larger ones



161-162. Peach tree before and after pruning. Peaches should usually be one year old from the bud and no older when planted in the home orchard. Some people leave short branches, but usually it is better to trim the peach or apricot tree to a whip

the trees, vines and bushes that are to be the parents of the plants in the home fruit garden as carefully as you would select the head of a herd, and for the same reason. Insist that your nurseryman furnish you with stock propagated from parents that represent the best types of the several varieties. If you do not expect to plant the fruit garden for one or two years, it will pay to visit your friends during the fruiting season, and arrange to take cions, cuttings, runners or suckers, as the case may be, from the trees or plants that especially please you. The nurseryman will be glad to take the cions or bud-sticks and propagate trees from them for you.

Many painstaking home orchardists now practise planting vigorous-growing trees for stocks, and top-work these with the cions that they have selected. Too much stress can hardly be laid upon the importance of this selection. It is even more important in the home orchard than in the commercial orchard. When a man wishes to increase the value of his live stock, he breeds from his best animals. The same principle may be applied to the fruit garden with equal profit.

LOOK OUT FOR HEALTHY STOCK

Be careful not to introduce diseases and insect pests on the stock. Most of the dissemination of fruit pests over the country is through infested stock. The nursery offers a very favorable chance for the spread of these troubles. Many home fruit gardens have

been ruined or seriously injured by pests introduced in this way. A few months ago, I was in a New York City back yard which contained ten fruit trees, the pride and delight of the owner until this year. Three years ago he planted a young tree, which later was found to have been infested with San José scale. In three years the pest has practically ruined all the trees in this yard. This was a dear price to pay for ignorance.

Require the nurseryman of whom you purchase trees or plants to fumigate them before shipment. This ought to destroy all insect life. Examine them carefully on arrival. Look for the scurfy coating of scale insects on the branches; for borers, low down in the stem; for root-knots and crown-galls; for blighted tips in pear trees. Discard and burn at once any fruit trees or raspberry plants with large knots and galls on the roots. If you are suspicious of the plants, it is always wise not to plant them until certain they are free from pests. The home fruit-grower cannot afford to be careless about this.

YOUNG STOCK THE BEST

Young stock is generally the most satisfactory. Many home fruit-growers, especially those with small suburban lots, make the mistake of planting trees, vines and plants that are too old. In some special cases, trees four to six years old, that are desired for "immediate fruiting," give fairly satisfactory results; but usually, according to my observation, they are so large and their root system is so limited in proportion to the top, that they do not recover quickly from the effect of transplanting and so come into bearing but slightly earlier than younger trees planted at the same time. Moreover, they seldom become as vigorous as the younger trees, that usually outstrip them in time. The general evidence is that it pays to plant young trees even when one is in a hurry for fruit.

In many parts of the West, and in some parts of the East, one-year-old trees of all fruits are planted. The advantages of planting one-year-old trees are, that a larger proportion of roots is secured in transplanting; that the grower can start out the scaffold limbs where he chooses; whereas in the two-year-old tree the scaffold limbs are already formed (see Fig. 155); that the tops of the trees are less likely to be infested because they have only been in the nursery one season. In the home orchard, older trees are usually more desirable.

In most parts of the East, fruits are commonly set at the following ages: Apples and pears two to three years; plums and cherries two years; peaches and apricots one year; quinces two to three years; grapes one to three years from the cutting; gooseberries and currants two years from the cutting; raspberries and blackberries, stock not more than one year old; strawberries, from new plants only.

There seems to be practically no difference in the value of piece-root grafted, whole-root grafted, and budded trees, provided they are of the same size and vigor, but this has always been a subject for incessant debate.

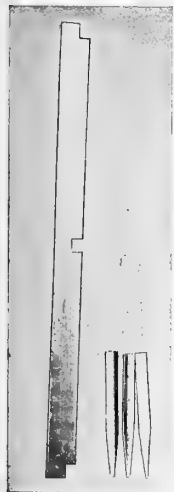


164. Planting a tree with the aid of a planting-board. This hole is two and one-half feet wide, two feet deep, and is none too large. Being planted in a very windy section, the tree is leaned slightly in the direction of the prevailing wind. This is not usually necessary. The notch is exactly where the stake was before the hole was dug

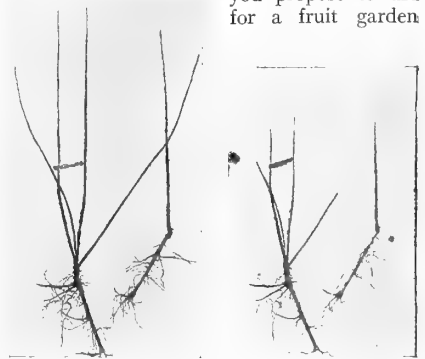
SPRING VS. FALL PLANTING

Usually it is best to plant the home fruit garden in the spring. Under some conditions fall planting is equally successful, but there is a greater element of risk. If a severe winter follows, the trees and plants are more likely to be injured than if a severe summer drought follows spring planting. The hardier fruits, apples and pears, are more successful when planted in the fall than the more tender fruits, as peaches and plums. Never plant trees in the fall on land that is likely to be quite wet during the winter; fall planting must be confined to well-drained soils. Plant only well-matured trees in the fall, not "stripped," unmaturing trees. Plant early enough so that the trees will make roots before the ground freezes—usually not later than the middle of October. All things considered, spring planting is preferable, since it is safer. An exception to this is the planting of pot-grown strawberries in the fall, from which it is desired to secure fruit the following year.

If the land that you propose to use for a fruit garden



163. A planting-board. It can be made in a few minutes, and is indispensable in planting even a few trees if stakes have been set where the trees should go. Another style has points in two ends, but this is better



165-166. Currants before and after pruning. One-year- and two-year-old plants of White Dutch currant. It is easy to see the cutting from which the plant came. Two-year-old plants of currants and gooseberries are usually best. Gooseberries are pruned the same way as currants



167. When the tree is received from the nursery its roots are often crowded, interlaced, and girdle one another. A judicious thinning will help to give a better-balanced root system. The roots of this Baldwin apple tree need thinning

is in sod, it is best, if possible, to put it into some vegetable-garden crop for one or two seasons before it is planted. This



168. The same tree as in Fig. 167, with the roots thinned preparatory to planting. The stub-root or Stringfellow system, is not usually to be recommended; but it certainly does pay to thin the roots when they crowd badly

helps to bring it all into a uniform and mellow condition. If planting is done in the spring, manure the ground liberally the fall previous, especially that part on which



169. Planting a grape-vine. Make the hole deep to accommodate the roots when they are extended downward. Let the top of the original cutting appear just above the ground. Spread out the roots naturally and filter dirt over and between them with the fingers

the small fruits are to be planted. Plow and fit the soil as thoroughly as you would for a vegetable garden. Plow the whole area.

It is rarely a good practice to set young trees or other fruit plants in holes cut out of the sod. If there is hard-pan within ten inches of the surface, it will be beneficial to break it up with a subsoil plow, in order that the trees may become deep rooted; but this is not absolutely necessary. Do not leave a dead furrow where a row of trees is to go. Prepare deeply and thoroughly, plowing under a heavy coating of manure if the soil is very light or very poor. Thorough preparation of the land saves much labor subsequently, and the fruits appreciate it.

PRUNING BEFORE PLANTING

Much depends upon the proper treatment of trees at the time of planting. A large part of the root system of the tree has been cut off in digging. Cut off the bruised and broken ends and thin out the crowding and interlacing roots. The stub-root or Stringfellow system of root pruning, described in *Country Life in America*, is not usually practicable except in some parts of the South. However, a judicious thinning of the roots of all fruit trees at the time of planting, particularly when they crowd and half-girdle each other, will do them good.

To meet the loss of roots, cut back the top of the tree from one-quarter to one-half, according to the extent of the root system left. On two- or three-year-old trees remove all branches except the three or four that you have selected to form the scaffold or framework of the tree. Shorten those that remain about a third. Peaches, apricots and all other one-year-old trees planted may be trimmed to a whip. The only exception to the general rule that the top of trees should be cut back at the time of planting is when they are planted in the fall. In this case they are planted with all the branches on and are not headed back until the following spring, as there is thus less danger of winter injury.

PLANTING THE TREES

In planting the trees, bring them from the nursery or cellar and heel them in on some convenient place near the orchard site, Heeling in is simply digging a trench deep enough to hold the roots, putting the trees in at a sharp slant, preferably with the tops pointing to the north, and covering the roots firmly with soil. As trees are needed for planting take them from the bunch of those heeled in and throw a wet burlap sack over the roots while carrying them to be planted.

If the orchard area has been laid across and staked, the next step is to plant the trees just where the stakes have been set. Do this with the aid of a planting board. This board may be four feet long, three inches wide and half an inch thick. Make a square notch at each end one and one-half inches wide, and another of the same size exactly in the middle of the board. The stakes that have been placed to mark the position of the tree should be small enough to fit into these notches. Place the middle



170. Plant deeply and firmly. Bring the soil in close contact with the roots by foot pressure. Spring lightly on the balls of the feet. The lighter the soil the firmer should the ground be compacted. On heavy clay soils omit this altogether

notch against the stake. Drive a peg into the notch at each end, pull up the middle stake, dig the hole and then replace the board against the two outside pegs. The tree may then be set against the middle notch, and will be exactly where the stake was, so that no sighting will be necessary. After the tree has been set, pull up the two outside pegs and use them in planting the next tree.

Dig the hole large enough to accommodate all the roots without bending them, and deep enough so that it may be set a little deeper than it was in the nursery. The harder the digging, the bigger should be the hole. The labor of digging may be greatly lessened by plowing out a deep furrow along a line where a row of trees is to be set. Put the rich surface soil on one side of the hole and the subsoil on the other. Throw some good, black soil in the bottom of the hole, set in the tree and spread the roots naturally.

Shake the rich surface soil down among the roots, being careful that there are no air spaces left around them, especially underneath the fork of the roots. Use the fingers for poking dirt between the roots; joggle the tree up and down slightly to settle the dirt. Fill the hole about half full, using the



171. The old saying is "There are three essential conditions to the successful cultivation of strawberries: first, plenty of water; second, plenty of water; third, plenty of water. The wonderful root system shows why

172. The plant in Fig. 171 prepared for planting. Cut or twist off most of the young leaves, which evaporate more water than old leaves. Reduce the root system slightly to make a proper balance with the top



173. Planting strawberries with a spade, usually the most satisfactory way in the home garden

richest dirt, then stamp down firmly. The lighter the soil, the firmer it should be tramped. Fill the hole completely and tramp again very firmly.

Before leaving the tree, throw a few shovelfuls of loose dirt around it to check the evaporation of moisture; or what is better yet, mulch it well with manure. Generally it is better to use the manure on top as a mulch than to put it in the bottom of the hole, especially if it is not well rotted or has too much straw. Leave the tree straight, except in some very windy sections, where it may lean several points in the direction of the prevailing wind and will straighten by the time it comes into bearing.

If planting is done in the fall, bank up with dirt for at least a foot around the base of each tree to throw off water and steady it in the wind. The main point in planting is to take time enough to do a good job. It is cheaper to spend plenty of time in planting a tree well than to re-set because of careless planting.

BUSH FRUITS

In planting bush fruits, immediately loosen the bundle of plants received from the nursery and heel them in on the north side of a building or in any cool, moist place. If the roots are very dry, douse them with water or in thin mud before heeling in. After the land is well fitted furrow out the

row deeply. Plant deeply; more berry plants die from too shallow planting than from too deep planting. Planting is quickly done by drawing earth about the roots with the hands and packing it with the feet.

Remember that raspberry, blackberry, currant and gooseberry plants should be headed back to meet the loss of roots just as was done with the tree fruits. It is an excellent plan to carry the plants in water when setting. Never leave the roots exposed



174. Press the spade over, opening a crevice deep enough so that the roots can hang down naturally. Set the plant a trifle below the crown so that, after pressing down, the crown will be on a level with the surface

to sun or wind, not even for two minutes. For the home berry plantation, raspberries and blackberries may be in rows six or eight feet apart, with plants set two or three feet apart in the rows. In two or three years each row will be five to six feet wide if unchecked. Each plant may be kept in a hill by planting six feet apart in the row, but the row system is better than the hill system, usually, for the home garden.

PLANTING STRAWBERRIES

When you plant strawberries, instead of running a furrow where the row is to be, prepare the ground thoroughly, then push a spade down into the ground to full depth on the spot where the plant should be. Press the spade to one side, insert the roots and spread them out in fan shape, allowing them to hang down their full length. Set the plant so that the crown of buds is just at the surface or a little below. Remove

the spade and press the dirt firmly against the roots by putting a foot on either side of the plant and springing slightly on the ball of the feet. In most soils this gives better results than turning out a furrow and planting in that, since the roots are established deeper in the soil. Brush some loose soil around the plant before leaving it.

Previous to planting remove all the young leaves from the strawberry plants, leaving only two or three of the older leaves, which evaporate less water from the plant than the young leaves. The ends of the roots may be sheared in if they are very long. While planting, carry the plants in a pail of water. It will pay to pour a quart or so of water about each plant of the small fruits after setting, for the purpose of settling the dirt around the roots.

In the home garden it is usually best,



175. Compact the soil around the roots. It can hardly be made too firm, except on wet or very clayey soils. Throw some loose dirt around the plant before leaving it. This will help to check the evaporation of soil moisture which the compacting has set up

unless the space available is extremely limited, to set the plants in rows three feet apart, with the plants eighteen inches apart in the row. At the end of the first season all the space will be covered with plants, if they are allowed to form runners at will. The "hedgerow" system, in which the plants are set six to twelve inches apart in the row, and not allowed to form any runners, is not usually as desirable for the home garden, although often very profitable commercially.

How to Grow Roses Out of Doors—By Aaron Ward Long Island

DETAILED PRACTICAL DIRECTIONS FROM AN AMATEUR WHO GROWS TEA ROSES NEAR NEW YORK WITHOUT GLASS PROTECTION, IN SPITE OF BITTER NORTHWEST WINTER WINDS

THE ideal site for a rose garden is sunny and free from the close neighborhood of trees or large shrubs. A southern exposure is desirable, and, if it is necessary to make a choice, the morning sun is best. Partial shade will do less harm to dark-red roses than to roses of other colors. Some protection from high winds is good, but not at the cost of having a close, stuffy location.

THE SOIL AND WHEN TO PREPARE IT

The best soil is a deep loam. Well-drained ground is essential and the site should never have been used for roses, unless fresh earth is substituted for the old.

At least three months before planting—to allow time for settling—the soil for the beds should be dug to the depth of two feet and liberally enriched with well-rotted manure; cow manure preferred, though horse manure is good.

The size of the beds is governed by the following considerations: All the bushes must be readily reached without leaving the walks; the surface of the beds must be accessible in every part for frequent cultivation, and the expense and labor of cultivating unnecessary space should be avoided.

With the exception of the climbers and the Rugosas (which ought not to be planted in the

beds at all), a space of twenty-one inches from plant to plant is sufficient to meet the above requirements. We accordingly lay out the beds in parallelograms of any length, but with the width limited to five feet. Such a bed should contain three parallel rows, twenty-one inches apart; the outer rows twelve inches from the edge. The paths between beds should be not less than five feet in width, to admit of the passage of the water barrel. If more space is available, this width of path could be increased to advantage. The paths look best if in grass; well-rolled cinder paths are good and save troublesome weeding, and they are the best for wet weather.

THE IMPORTANT CLASSES OF ROSES

The Hybrid Perpetual varieties have one period of bloom, from about June 5th to July 5th. If judiciously cut back after blooming, some additional flowers may be expected in mid-autumn. But as a rule the term "perpetual" is a very misleading name with American conditions of climate. This is the reason why so many people are disappointed, who expect these roses to flower freely a second time, as described in English books, which treat of English conditions. The Provence and Damask roses also bloom between June 5th and July 5th.

The Teas, Hybrid Teas and Bourbons have two distinct periods of bloom, namely, from about June 15th to July 25th, and again from the beginning of September until cut down by frost.

The Bengal and Polyantha roses bloom off and on at intervals throughout the season. Few of them attain to any great size of flower, and most of the Polyanthas bloom in clusters of miniature roses. But both are very useful at times, when few other roses can be had, and no garden of any large size should be entirely without them. They should be bedded apart from the larger growing varieties, for most of them are small growers; but this rule is by no means absolute. Eugène Beauharnais (Bengal) and Marie Pavie (Polyantha), for example, being very large bushes.

Rugosas, owing to their very bushy growth, should be in separate beds. Four feet between plants will be none too much. They bloom once profusely, and off and on sparingly thereafter.

The climbers follow their races in periods of bloom, the climbing Perpetuals blooming once and the climbing Teas having two good periods of bloom. The Noisettes have the Tea habit; the climbing Hybrid Polyanthas (which includes the Ramblers), and also the Wichuraiana Hybrids, bloom but once.

The climbers of any given race take much longer to be established than the non-climbing varieties. Climbers, if planted in a row along a fence or trellis, should be at least four feet apart. Several varieties need twice that space between plants. Their soil should receive at least as deep cultivation as the ordinary rose beds and the plants themselves should not be forgotten, as they often are, when the food supplies are going around.

THE HARDIEST RACES

The Hybrid Perpetuals and Rugosas are absolutely hardy in this latitude and require no protection. Polyanthas do not need much. All other varieties are more or less tender. If the owner is satisfied with a single month of bloom and cannot devote the necessary time and attention to protecting other varieties, then all the roses should be selected from among the H. P.'s and Rugosas and the hardy climbers.

In any case, start with the very best field-grown plants that can be found. Inferior stock is dear at any price, and plants grown in greenhouses cannot be relied upon to survive the winter out of doors.

WHEN TO PLANT

Hybrid Perpetuals and Rugosas may be planted in early November, and one need not hesitate to plant most of the Hybrid Teas and the hardier Teas at the same time if prepared to protect them properly and after the first frost. But, as a rule, spring planting gives the most satisfactory results in the end. In this case, plant the Hybrid Perpetuals and Rugosas as soon as the soil is in suitable condition and the frost out of the ground, usually about March 25th. All other varieties are best planted after April 20th, when the danger of sharp frosts is past.

HOW TO PLANT

If the plants arrive in a shrivelled condition, soak them thoroughly in water and bury them completely in a trench, again soaking them with water. Uncover after three days and they will usually be found revived. If the plants arrive in wet weather, or when the ground is frozen, do not open the box, but place it in a barn or other dry place where there is no artificial heat. Cover it with matting or blankets if the weather is cold. When the weather is dry and conditions fit for planting, unpack the roses in a place sheltered from the wind and sun. From this time on it is absolutely necessary to avoid undue exposure of the roots. In sorting out the varieties while still under cover, use old mats or straw to keep the roots covered.

Do not take any more plants to the beds at a time than can be properly protected nearby or promptly planted. During this move some people protect the roots by dipping them in mud, others carry them about in pails with the roots immersed in water. All these precautions are taken to avoid the immediate and very harmful drying action of the sun, and especially of the wind, upon the fibrous roots of the plants. Hence the first rule for planting is to wait for dry soil and to select, if possible, a calm, cloudy day.

Examine the roots before planting, cut off neatly any bruised parts, but in general do not prune or shorten rose roots. Examine the stem very carefully for suckers and remove these completely. The difference in appearance between a sucker and a root is this; the sucker swells the farther it is from the stem, and the root tapers the farther it is from the stem.

Too deep and too shallow planting are very damaging errors; the first is certain to kill the plant by rotting the stem, and the second insures spindly, unsatisfactory growth, besides exposing the roots to serious strain in high winds. The writer is aware of the success of Mr. Prince in England with shallow planting, but does not believe it to be practicable in this climate.

The planting can be done by one person, but two working together will accomplish relatively much more and do better work: one holding the plant and the other filling in.

In planting a long row, it will save time to trench out the site with a wheel hoe to a depth slightly greater than is required, measure off and stake out the rose places,

plant and fill in. Place the union of the stock with the bud two inches below the surface of the soil, laying the roots out carefully and taking care that they do not cross or coil around. Do not place manure directly in contact with the roots, but first cover them with fine mold, after which some fine well-rotted manure may be laid on, then cover with soil nearly to the final level. Tread in firmly, water the roots freely and when the water is absorbed fill up to the bed level and see that the union of the stock is where it belongs, two inches below the surface.

Tender roses, planted on or about April 20th, may have thrown over them a few loose handfuls of old hay, or other light covering, to protect from possible late frosts and from the glare of the sun. After about ten days this shelter may be removed. The hardy roses do not need it.

PRUNING

When roses are planted in the autumn, prune them as little as possible. All pruning is best postponed until after February. Sometimes, however, non-climbing roses will shoot up at the end of the season in pithy, worthless stalks or weak streamers, whose swaying in the high winds is likely to be injurious to the plants by disturbing the roots. Such pithy shoots should be cut out altogether and the streamers topped off.

The pruning of the hardy roses, climbers and non-climbing, should be completed by the middle of March. Tender roses may be pruned in early April; the object is to keep the covering undisturbed as long as possible, but to avoid waiting until the sap is running freely. A revision of the pruning will have to take place by May 1st anyhow, but it should be limited to what is indispensable. Prune back recently planted roses rather vigorously. Protect all severe cuts with tree wax.

In general, roses are pruned too severely because the owners are following rules laid down for another climate, and for people whose first object is to exhibit.

The stronger the growth of the rose, the less it should be pruned, many such roses, if too severely cut back, will run to wood (Margaret Dickson) or die out altogether (Gloire Lyonnaise).

In pruning, cut out all the dead wood and weakest shoots first. Where two limbs make a bad cross and are liable to chafe, remove one of them, remembering to keep the centre of the plant as clear as possible to admit the circulation of air. Now consider what you have left and what you want to do. If but few roses of surpassing size are wanted, then prune a vigorous plant to three or four eyes on the shoot; if you want quantity, leave six eyes, or even more. The last eye left on the shoot should point outward, to avoid crosses.

In pruning the weak-growing varieties, it will generally be found that the winter has done most of the work already, leaving but little to choose from.

In this case prune to the very soil, if necessary, to get to sound wood. If any-

thing remains at all after this apparent destruction, these same plants will be found to bear profusely before the season is over.

Rugosas, climbers and pillar roses should be pruned as little as possible, merely removing the old wood past bearing, cutting out dead wood and trimming back the ends of the remaining shoots slightly, after training them. It may be stated here that in training all climbers, you must avoid straight-up training, or the sap will all tend to the top, denuding the lower part of the plant. First bend the shoot in one direction or another, then let it tend upward if necessary. If a climber has developed more shoots than it appears able to support, the weakest may be removed, remembering that in most cases the bloom of any one year is best on the last year's shoots.

CULTIVATION, SUCKERS, LIQUID MANURE

By April 15th the bushes will usually be in sap, and from that time on the surface of the soil must be kept hoed and in a careful state of cultivation. As seasons go, it may be assumed that a hoeing will be required every fortnight until mid-July, at which time, after a final hoeing, a good mulching will be found of service.

During this cultivation, and at all convenient times, keep a sharp lookout for suckers, which are growths shooting up from the roots from below the graft. Where the rose is budded on the briar, as is usually the case, the difference of foliage is so marked as to attract attention at once, the briar having very light green and small leaves as compared to the rose leaf, and also a gross reddish-white stem when young. The suckers should be carefully broken off at their point of junction with the root, if this can be done without disturbing the plant. Otherwise they should be cut off as low in the ground as the shears will reach. If this detail is neglected, the result may be a choice crop of briars with corresponding shyness of rose bloom. Manetti stock is more difficult to detect, as it resembles the rose in leaf. It should not be used as a stock for out-of-door plants.

When the roses are setting their buds, a great benefit will be derived from the application of liquid manure.

The fluids from the barn-yard, and particularly from the cow stable, if collected in a tank as they should be, will make a remarkable difference in the rose crop. As collected, this manure is far too strong for application and it should be diluted to about the color of ale and applied freely, preferably just after a rain.

In my practice this application is made to the "June roses" by June 1st and to the Teas and Hybrid Teas by June 15th, and again to both classes in about mid-July, at the rate of not less than half a gallon to the plant; double the quantity would do no harm. Do not forget the climbers in the distribution.

Watering will be necessary in dry weather, and to be of any use it should be copious, fully a gallon to a plant. In all the applications of fluid, remember that the feeding fibres are

out in the bed, not around the stem; or as an English authority puts it, "When you feed a man, you put the bread in his hand, not on his shoulder."

Avoid watering in the heat of the sun.

WHY AND HOW TO MULCH

By mid-July, when the great heats are on, give the beds a good final hoeing and cover them with a liberal mulch of cow manure, or stable manure, rather well spent. The object is not to enrich the soil, but to retain the moisture. It may be necessary to water in spite of this assistance, but it will be found a great help. Remove the surplus mulch in the fall before putting on the winter protection, so that the level of the beds may not be raised too high.

CUTTING AND DISBUDDING

A queer fallacy induces some people to leave the roses unpicked with the idea of encouraging the plant. As a matter of fact, roses should not only be picked as freely as possible, but with as long stems as the growth will permit, merely observing the precaution to leave an outward-growing eye, or perhaps two for safety, on the stem below the cut.

Where it has been found impossible to pick all the roses for use, then the plants should be gone over daily and all faded flowers removed to a point at least two eyes below the flowers. A regular practice of this precaution is the only means of assuring some autumnal bloom, in our climate, from hybrid perpetuals.

Disbud freely on all free bloomers. Usually the H. P.'s bloom in clusters of three. By disbudding and leaving the centre bud, a very much finer effect will be obtained than in the effort to mature all three.

SPRAYING

Well-grown, healthy roses suffer little in the open air from insect pests—the rose bug always excepted—whose depredations do not depend upon the health of the plant.

INSECTS AND DISEASES

The green fly, or *aphis*, may make its appearance, but this and other sucking insects are readily kept in check by preventive spraying with a solution of whale-oil soap, one pound to eight gallons of water, which we usually apply four times a season, beginning just before the leaves open, and every twenty days thereafter to July 1st.

Mildew and black spot, fungus pests, are usually due to continued wet weather. As a preventive, the best fungicide is the normal Bordeaux mixture, the "one six" mixture, diluted to one-half strength, as follows: Sulphate of copper, six pounds; lime, four pounds; water, ninety gallons. Apply once a month.

But this may render the foliage unsightly. A safer preventive is sulphide of potassium (liver of sulphur), one-half ounce to one gallon of water. As this washes off easily, it may have to be repeated oftener; say as often as once a week.

Both remedies are effectual as preventives of black spot and should be kept at their

work from mid-July, to check the loss of foliage that often comes in mid-August and weakens the plants. If mildew actually appears here and there on individual plants, powder them and the ground underneath on a sunny day with flowers of sulphur, and increase the spraying.

A chewing beetle, and a pest of the first magnitude on sandy soil, is the rose bug. It flourishes at its worst from June 15th to July 1st. Paris green at the rate of one pound to 200 gallons will fetch him, but it injures the foliage. The application of arsenate of lead, five pounds to fifty gallons, is recommended by high authority, and will be given an exhaustive trial this year.

Where the rose bug is not too numerous, hand picking, especially in the early morning, will be effectual.

WINTER PROTECTION

With the exception of the Hybrid Perpetuals, Rugosas, Hybrid Polyanthas (Ramblers) and Wichuraianas, roses are benefited by protection in this climate, and most of them require it.

Here is a successful method of protection: By November 15th all roses, including the hardy ones, are given a liberal coating of well-rotted manure around the base of the plant, forming a cone about ten inches high. All shoots of tender climbers relied upon for next year's bearing are carefully bent down and buried, with or without a salt-hay protection over the earth, according to the degree of hardiness. All beds except those of hardy roses are then covered after the first hard frost with a coating of dried leaves, at least twenty inches in thickness, held in place by wisps of salt hay, or straw, the holding-down material not to be too heavy.

The covering should be completed usually by Thanksgiving Day, but of course the final application of leaves will depend upon the actual date of the first good frost. Do not cover too soon, nor with leaves which are wet and soggy or half rotted.

In the spring remove the covering gradually, none of it as a rule before April 1st, and some should remain until at least April 20th, to guard against late frosts. What remains of the manure may be forked in, but avoid getting the rose stems buried beyond the proper depth.

THE BEST VARIETIES FOR THE LATITUDE OF NEW YORK

The assortment of one hundred roses named in the following list includes the leading varieties found satisfactory in the North, when treated as above described. The color division is rather arbitrary and in the case of Teas and Hybrid Teas, it indicates merely the principal or primary color of the beautiful combinations found in these roses. Single roses, Luteas, Damasks, Wichuraianas and others of interest only to the general collector are intentionally omitted.

BUSH ROSES

White.—*Bourbon*: K. P. Victoria, Souv. de la Malmaison. *Bengal*: Ducher. *Poly*



176. *Crimson Rambler*. Most popular climbing rose in existence. Hardy as a rock. June and July



177. *Ulrich Brunner*. Cherry-red; most popular large-flowered H. P. Flowers intermittently



178. *Suzanne Marie de Rhodocanachi*. One of the best strong-growing pink H. P.'s. Flowers twice

anthas: Étoile de Mai, Marie Pavie. *Rugosa*: Blanc Double de Coubert, Mme. G. Bruant. *Tea*: White Maman Cochet. *Hybrid Teas*: Augustine Guinois-eau, E. Wilmot, Innocence, Kaiserin, Mme. J. Combet, Souv. Pres. Carnot. *Hybrid Perpetuals*: Frau K. Druschki, Margaret Dickson, Merveille de Lyon.

Pink and White.—*Teas*: Anna Ollivier, Comtesse de Turenne. *Hybrid Teas*: Antoinette Rivoire, Clara Watson, Grace Darling, Lady Clanmorris, Prince de Bulgarie, Vis. Folkestone. *Polyantha*: Clothilde Soupert.

Pink.—*Teas*: Boadicea, G. Nabonnand, Maman Cochet. *Hybrid Teas*: Belle Siebrecht, Camoens, Ferd. Jamin, Killarney, Mme. C. Testout, Mme. J. Grolez, Papa Lambert. *Hybrid Perpetuals*: Anna de Diesbach, Baron de Rothschild, Mme.

Gabriel Luizet, Mrs. John Laing, Mrs. R. S. Crawford, Paul Neyron. *Bourbon*: Mrs. Paul. *Rugosa*: C. F. Meyer.

Salmon.—*Tea*: Souv. de C. Guillot (tender.) *Hybrid Tea*: Mme. A. Chatenay. *Bengal*: Aurore, Queen Mab (tender).

Bright Red.—*Teas*: Jules Finger, Souv. J. B. Guillot (thin). *Hybrid Teas*: Gruss an Teplitz. *Hybrid Perpetuals*: Alfred Colomb, Comtesse d'Oxford, Éclair, Fisher Holmes, La France of '80, Mme. Victor Verdier, Marie Baumann, Ulrich Brunner. *Polyanthas*: Leonie Lamesch, Mme. N. Levavasseur.

Dark Red.—*Hybrid Tea*: Étoile de France. *Hybrid Perpetuals*: G. Lefévre, E. Furst, Jean Liabaud, Louis Van Houtte, Prince C. de Rohan, Souv. de W. Wood, Victor Hugo.

Light Yellow.—*Tea*: Marie van Houtte. *Hybrid Teas*: Amateur Teyssier, F. Deegen, Mlle. H. Cambier, Mme. Pernet Ducher. *Bengal*: Frau. S. Roeloffs. *Polyantha*: Perle d'Or.

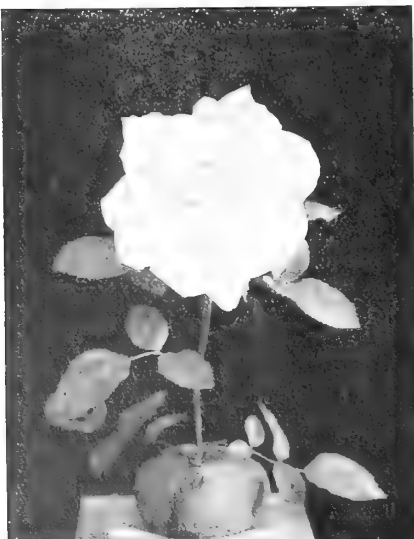
Dark Yellow.—*Teas*: Doctor Grill, Francisca Kruger. *Hybrid Teas*: Le Progrès, Mme. H. Leuillot, Mme. Ravary. *Bengal*: Mme. E. Resal. *Polyantha*: Eugénie Lamesch.

CLIMBERS

White.—*Prairie*: Baltimore Belle. *Polyantha*: Thalia.

Bright Red.—*Tea*: Reine Marie Henriette. *Rambler*: Crimson Rambler. *Noisette*: Reine Olga. *Hybrid Perpetual*: Ard's Rover.

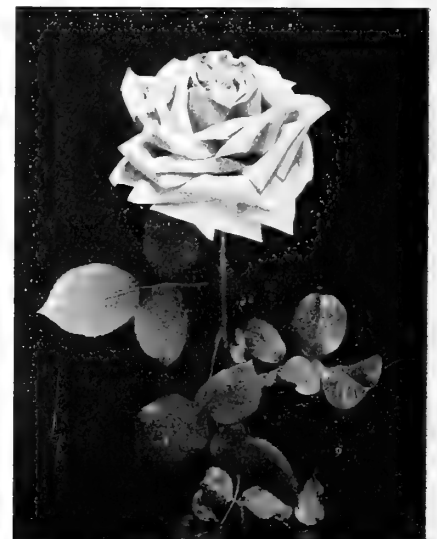
Yellow.—*Polyantha*: Aglaia. *Tea*: Duch-



179. *Gloire Lyonnaise*. Favorite strong-growing H.P. Creamy white. Flowers intermittently



180. *Maman Cochet*. Hardest of Teas. Flowers all season. Good for bedding. White or pink
SIX PORTRAITS OF FAVORITE ROSES



181. *La France*. One of the best large-flowered roses. Hybrid Tea. Flowers pink; very fragrant



182. An ideal rose-bed for flowers, not for shrubbery. Cut back nearly to the ground every year. Shabby when out of bloom



183. Roses for cut flowers. Cut down to within a foot of the ground in early spring to get better flowers and avoid the stake



184. Roses for arbors should look well when out of bloom. Crimson Rambler doesn't; Wichuriana does. It has small, single flowers and evergreen foliage

esse d'Auerstadt. *Noisettes*: Bouquet d'Or, Rêve d'Or.

Violet-Rose.—*Multiflora*: Helene. Carmine and Yellow.—*Tea*: Souvenir de Mme. L. Viennot.

Pink.—*Bourbon*: Climbing Malmaison. *Polyantha*: Euphrosyne. *Prairie*: Prairie Queen.

Salmon Shades.—*Tea*: Mme. Bérard. *Noisette*: W. A. Richardson.

A ROSARIAN'S CALENDAR

March 15th.—Finish the pruning of hardy varieties already planted.

March 25th.—Plant new hardy roses, pruning new plants rather more severely than those of the same varieties already established.

April 15th.—Finish the pruning of tender varieties, as far as possible, without uncovering completely, which might result

in injury to the plants. Give to all the beds and to any neighboring pear trees, grape vines, or other plants subject to fungoid troubles, a good spraying of Bordeaux mixture as a preventive.

April 20th—25th.—Uncover tender varieties. Plant any new ones received; giving these slight protection of loose hay for a short time over the tops, and a rather severe pruning.

End of April.—Roses generally in leaf. Give a preventive spraying of whale-oil soap. Final touches to pruning.

May 20th.—Buds forming. Second spraying of whale-oil soap.

May 25th.—Earliest roses bloom (Scotch followed by the luteas). Apply liquid manure to H. P.'s.

June 5th.—Hybrid perpetual roses in quantity. Watch for rose bug.

June 10th.—Third spraying with whale-oil soap. Rose bug. Treatment as necessary. Apply liquid manure to H. T.'s and T.'s.

June 20th.—Hybrid teas and teas in quantity. Watch for rose bug and for mildew, treat the latter with sulphide of potassium.

July 1st.—Last spraying with whale-oil soap, hybrid perpetuals decreasing.

July 10th.—Rose bugs disappear. Commence regular applications for black spot, if a wet season; sulphide of potassium every week, or dilute Bordeaux mixture every twenty-four days, this treatment depending wholly on weather and appearance of foliage, and lasting, if necessary, to August 20th.

July 20th.—Hybrid teas and teas decreasing. Mulch beds by this date at the latest.

August 30th.—Hybrid teas and teas, second bloom begins, lasting until frost.

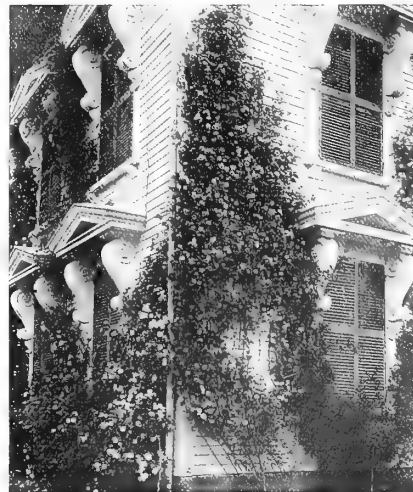


185. A rose tree in California. *Noisettes* are unrivaled for this purpose in warm climates. They may grow thirty or forty feet high



186. Roses for the back door. *Banksias* have flowers only a quarter of an inch across, but are unrivaled south for fragrance and glossy foliage

SIX DIFFERENT WAYS OF GROWING ROSES



187. Roses for covering a house. This old red rose at Norfolk, Conn., was planted in 1799, and is still flourishing, though it has had troubles

September 15th.—Second bloom of hybrid perennials begins, but usually it is not very plentiful.

October 15th.—Prepare new beds for the next spring planting. Remove from old beds any of the mulch that cannot be forked in.

November 15th.—Commence placing manure protection around roots, tenderest roses first.

November 30th, or after a nip or two of decided frost, cover up tender roses for the winter. Give the Teas straw overcoats.

WHEN TO SPRAY THE ROSES AND HOW

Use the sulphide of potassium in a solution of one-half ounce to one gallon of water; arsenate of lead five pounds to fifty gallons of water; and only when necessary.

Mid-April.—Spray roses and neighboring trees. Bordeaux.

Late April.—Just before leaves open. Whale oil, one pound to eight gallons of water.

May 10th.—Leaves open. Potassium sulphide.

May 17th.—Potassium sulphide.

May 21st.—Buds set. Whale oil.

May 24th.—Potassium sulphide.

June 1st.—H.P.'s begin to bloom. Potassium sulphide.

June 7th.—H.P.'s bloom in quantity. Arsenate of lead.

June 14th.—H.P.'s bloom in quantity. Arsenate of lead.

June 21st.—H.P.'s bloom in quantity. Whale oil (last application).

June 28th.—H.T. and T. in quantity. Arsenate of lead.

July 4th.—H.T. and T., H.P.'s bloom ends. Arsenate of lead.

July 11th.—H.T. and T. in quantity. Whale oil.

July 18th.—H.T. and T. in quantity. Potassium sulphide.

July 25th.—H.T. and T., bloom ends. Potassium sulphide solution.

August 1st.—Potassium sulphide solution.

August 8th.—Potassium sulphide solution.

August 15th.—Potassium sulphide solution.



Is the Summer Hyacinth Any Good?

"LET me give you a pointer," said our knowing friend, as we were making out our spring order, "Don't waste any money on the summer hyacinth! I gloated over that same picture in the catalogues for years, until I bought a bulb and grew it. It doesn't amount to anything."

We didn't follow her advice, and we are glad of it. Satisfaction in growing the summer hyacinth (*Galtonia candicans*) can only result when a number of the bulbs are planted in good, big masses. When standing alone the plant may fail to rise or may be blown down by wind and its flowers meet an ignoble fate. Even when well developed the plant seems to lack individuality, and this is probably the chief reason why some people have been disappointed in it. When, however, a score or more bulbs are planted in a group, the insignificant leaves form a grass-like bank of green from which the tall spires of fragrant, pendulous white bells rise with a dignity and grace not seen in the individual plant. Instead of yielding a few lonely flowers for a week or two the clump will be attractive for several weeks. Figure 188 gives a good idea of the beauty of a bed of these plants.

Even though the bulbs are fairly hardy, in rather cold climates it is wisest to cover them during the winter with a thick mulch to prevent deep penetration of the frost and to

keep the frozen ground from thawing during mild weather. Severe cold injures the bulbs less than alternate thawing and freezing. If unmolested, the bed will improve for several years. Where the winters are very severe, it is best to dig up the bulbs after the tops have died down in the autumn. They should be cleaned and stored like gladiolus bulbs, in a cool, dry place until the spring. When the ground has become fairly warm, plant the bulbs about a foot apart in rather moist, friable soil, where they will have plenty of sun.

The bulbs grow readily from seed. In three years, and often in two, the seedlings will begin to flower. A group like that in Figure 188 might be produced in three years from a ten-cent package of seed. The bulbs cost about five cents apiece, or three dollars a hundred. They should be planted in the spring.

The summer hyacinth is about the only plant from South Africa that is hardy, and even in this case it is best to cover the bulbs in winter with a foot of litter, if the climate is severe. It grows three or four feet high, and its white, fragrant, drooping, bell-shaped flowers are borne to the number of twenty in racemes sometimes a foot long. Nurserymen usually call this plant *Hyacinthus candicans*, but it is entitled to a different genus, chiefly because of the more numerous and flattened seeds.

New York.

M. G. KAINS.

Dried Bush Limas for Winter Use

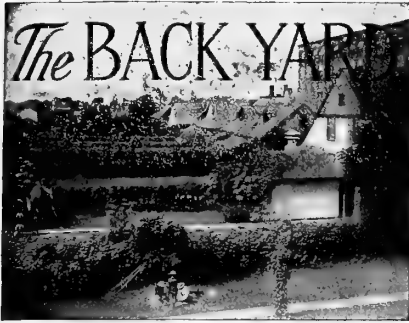
WE do not consider our garden complete without the Henderson bush lima bean, a quantity of which we always dry for winter use. They are small and tender and in every way superior to the dried limas that one buys. A supply can be raised in any garden, for the plants occupy very little space. We always buy the smallest sized package of seed, which plants a row sixty feet or more long. The plants are quite compact—for beans—and so do not cover much ground. From this little row of beans we reap quite a harvest. We use them green until the pole limas are ready and then leave the rest to dry. They are ready for summer use about the first of August. Last year they gained nearly a month on the regular last-of-May planting of pole limas, which could not be picked till the end of August. We had more than a dozen quarts of green limas and enough of the dried to last till midwinter. A few of these go a long way. One cupful of the dried beans, soaked over night, will make a good dishful for a family of five or six. The beans are simply left alone on the vines. When they are thoroughly dry, but before the pods pop open and shed the beans on the ground, we pull up the whole vines and throw them into a large, clean piece of bagging. Fold this securely over the top and trample until the beans have shelled themselves.

Dry weather is important for the picking, because the pods are very tough if at all damp, and they would be liable to mold. Finally, the beans are picked over to sort out any unfit to eat and spread on a tray in the garret.

A. R. M.



188. A wonderful group of the summer hyacinth, a plant which makes no impression when grown singly. A group like this might be worked up in three years from a ten-cent package of seed. It grows three or four feet high and has fragrant, white, pendulous flowers. Plant the bulbs this spring



Three Thousand Plants of Golden Glow in Four Years at No Cost

I WAS awarded first prize for the best-kept grounds by the village improvement society at Manchester, Mass. My lot is 45 x 114 feet, and about half of it is occupied by my restaurant and dwelling. The lot is enclosed by a board fence six feet high, which I cannot control. This fence is an annoyance to me. I should much prefer a wire fence that could be completely covered with vines. To hide the fence as much as possible, I

chose *Rudbeckia Golden Glow*. I could not afford to buy enough plants to screen the whole fence in one season, but in four years I have succeeded in hiding the whole fence without paying a cent for plants. Four years ago a friend gave me about a peck of roots, which, when divided and set a foot apart, made a single row about ten or twelve feet long. The second spring, I dug up all the plants, divided them, and had a row fifty or sixty feet long. The third season, I dug up the plants during a January thaw, and got remarkably good results by dividing them at that unusual season. Some of the ground was frozen and I put the plants in the sunlight to thaw out. This gave me a row the full length of the lot (114 feet), clear across the back (forty-five feet) and along the other side as far as the house. The fourth year I doubled the whole border (now 220 feet long) by making it two feet wide. Thus I estimate that I have about three thousand plants, all healthy, prolific and remarkably uniform. I wonder if any other amateur has propagated so large a stock from so small a beginning in four years, and whether such a record would be possible with any other plant than the wonderful Golden

Glow? I believe it is the most popular hardy perennial introduced during the last twenty-five years. What a fortune for some one who could get it in other colors!

The fence is now hidden by a living wall of green, and I have untold thousands of flowers from August until frost. Nor do I find it monotonous because it is all one kind of plant. Ordinarily, the *Golden Glow* grows about six feet high, but with me it attains nine or ten feet. To keep it from falling forward, I have invented a little scheme for keeping the plants in place, which is effective and practically invisible. Vertical stakes six feet high, about an inch wide and thick, and painted dark green, are placed every ten feet in a row parallel with the fence and about two and a half feet away from it. These stakes carry a wire near the top, which prevents the flowers from falling forward. Every two feet I have a wire from fence to running wire to keep them from sagging in wind or rain storms.

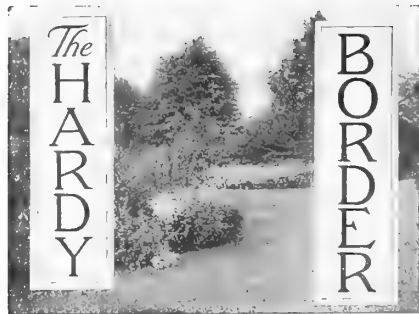
The other plants shown in the picture are dahlias, *Lavatera* (an excellent pink and white flower of the mallow family) and candytuft.

J. S. REED.

Manchester-by-the-Sea, Mass.



189. This yard has a six-foot board fence completely hidden by *Rudbeckia Golden Glow*, of which about three thousand plants were propagated at home in four years from a peck of roots. The necessary stakes and wires are practically invisible. The lot is 114 feet long



Artistic Color Combinations with Perennial Flowers

A GLIMPSE at the fifty colored plates of "Some English Gardens" shows that we are still two or three hundred years behind the English in our love of gardens and flowers. This sumptuous book, by George S. Elgood and Gertrude Jekyll, is full of inspiration and of practical suggestion for Americans, especially in formal gardening. While many of the ideas could be duplicated only by the rich, the color combinations of hardy perennials, which are the glory of the book, are entirely practical for anyone who has a hardy border. Here are some of the best combinations.

TWO-COLOR COMBINATIONS

Orange and blue. Herring lily (*Lilium croceum*), and monkshood (presumably *Aconitum Napellus*). Also herring lilies and larkspurs.

Pink and lavender. China roses and lavender (*Lavandula vera*).

Pale blue and pale yellow. Monkshood (possibly *Aconitum Fischeri*), and evening primrose (doubtless *Oenothera biennis* var. *grandiflora*, known to the trade as *Oenothera Lamarckiana*). Also lavender (*Lavandula vera*), and *Lilium monadelphum*, known to the trade as *L. Szovitzianum*.

Pink and yellow. *Anemone Japonica* and "goldilocks," one of the few yellow Michaelmas daisies (possibly *Aster Linosyris*, known to the trade as *Linosyris vulgaris* and *Chrysosoma vulgaris*).

Scarlet-orange and yellow. Poker plants (*Kniphofia* or *Tritoma*), and *Anthemis tinctoria*, an excellent summer- and autumn-flowering composite.

Pink and white. Red valerian (*Centranthus ruber*), and tall white lilies. (They stand among thatched beehives in Mr. Elgood's charming painting.)

Purple and yellow. New England aster (*Aster Nova Angliae*), and Lamarck's evening primrose (*Oenothera biennis* var. *grandiflora*, known to the trade as *Oenothera Lamarckiana*). Also New England asters and French marigolds.

THREE-COLOR COMBINATION

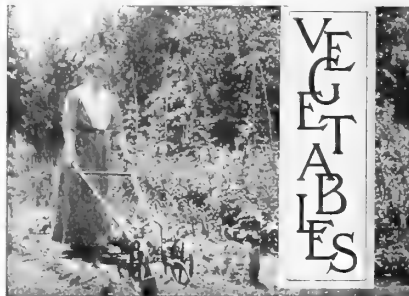
Pale yellow, white and china pink. *Aconitum Lycocotnum*, *Lilium candidum* and phlox.

FOUR-COLOR COMBINATIONS

White, blue, pink and yellow. *Chrysanthemum uliginosum*, about five feet; veronica, one and a half to three feet; *Anemone Japonica*, two and a half feet; snapdragons, one and a half feet.

Blue, white, purple and orange. Larkspurs, four feet; Canterbury bells, lavender and white (*Campanula Medium*); *Lilium elegans* (just a touch, to spice the whole).

Yellow, white, red and lavender. Big annual sunflowers, six feet; *Chrysanthemum uliginosum*, four feet; cardinal-red dahlias, three feet; lavender, one and a half feet.



How Much Seed to Plant for a Family of Six

THE following rules will be helpful for the beginner who wants to get fresh vegetables and fruits from May until mid-winter. A space 100 x 200 feet is enough.

HOW TO PLAN THE GARDEN

1. Plant in rows, not beds and avoid the backache.

2. Plant vegetables that mature at the same time near one another.

3. Plant vegetables of the same height near together—tall ones back.

4. Run the rows the short way, for convenience in cultivation and because 100 feet of anything is enough.

5. Put the permanent vegetables (asparagus, rhubarb, sweet herbs) in a row at one side, so that the rest will be easy to plow.

6. Practice rotation. Do not put vines where they were last. Put corn in a different place. The other important groups are root crops (including potato and onion), cabbage tribe; peas and beans; tomato, eggplant, and pepper; salad plants.

7. Don't grow potatoes in a small garden. They aren't worth the bother.

SOW BEFORE DANGER OF FROST IS PAST

Vegetable	No. of feet	Seeds
Parsnip	50	½ ounce
Salsify	50	1 ounce

Plant above in one row next to permanent vegetables because they stay in the ground all winter.

Vegetable	No. of feet	Seeds
Onion sets	25	1 pint
Onion seed	75	1 ounce
Beets, early	50	1 ounce
Lettuce	50	½ ounce
Radish	100	1 ounce

Sow radish in same row with lettuce.

Vegetable	No. of feet	Seeds
Cabbage, early	100	40-50 plants
Cauliflower	100	40-50 plants
Pea, extra early	100	1 quart
Pea, intermediate	100	1 quart
Pea, late	100	1 quart
Pea, early (succession)	100	1 quart
Pea, dwarf	50	1 pint

Sow the first three March 15th-April 1st; the fourth when No. 1 is out of the way; the last April 15th.

AFTER DANGER OF FROST

	In rows	
Corn, early	300	1½ pints
Corn, late	200	1 pint
String beans, early	50	1 pint
String beans, late	50	1 pint
Tomato	100	33 plants
Okra	100	2 ounces
Eggplants	100	25 plants

VINES

	In hills, 6 x 6 feet	
Cucumbers	16 hills	1 package
Muskmelons	32 hills	1 package
Squash, summer	6 hills	1 package
Squash, late	12 hills	1 package

PERMANENT VEGETABLES

Rhubarb bed	25 x 3 feet	6 large clumps
Asparagus bed	25 x 3 feet	12 large clumps
Sweet herbs	100 x 3 feet	6 packages

Parsley, sage, mint, thyme, caraway, dill. Not permanent but should be in a border.

SUCCESSION CROPS

After these	Plant these
Early peas	Late cabbage, 24 plants
Intermediate peas	Cauliflower, 24 plants
String beans	Celery, 50 plants

DISTANCE BETWEEN ROWS

Size of Vegetables	Distance	Examples
Big	4 feet	Tomato family, peas
Medium	3 feet	Corn
Small	2 feet	Lettuce
Vines	6 feet	Cucumber

New York.

C. E. HUNN.



Fruit Enough for a Family of Six for Table Use and Canning

THE following garden requires 100 x 100 feet. Small fruits planted this year will yield next year.

Fruits	Space to plant Feet	Distances Feet
Strawberries, early	100	1½ x 4
Strawberries, mid-season	100	1½ x 4
Strawberries, late	100	1½ x 4
Raspberries	200	3 x 5

(Red, black, yellow and purple: the last for canning.)

Blackberries	200	6 x 6
Currants	100	3 x 4
Grapes	200	8 x 8
Peaches (6)	100	15 x 15
Plums (6)	100	15 x 15
Pears, dwarf (6)	100	15 x 15

New York.

C. E. HUNN.



The Dishrag Gourd or Vegetable Sponge

THE vegetable sponges that are commonly sold in drug stores and used in the bathroom are produced by a vine like a cucumber which anyone may grow in his garden. In tropical countries these vegetable sponges are often used for dishrags (being particularly useful for scouring pans and kettles), and it has been suggested that housewives in the North should "grow their own dishrags," since a clean sponge could be used for each dish-washing performance and then thrown away, thus relegating to history the rubbing out of greasy cloths.



190. The dish-rag gourd, with husk partly removed to show the fibre



191. The cucumber-like vine which produces the vegetable sponges. Taken at the edible stage, when the young fruits may be sliced and eaten like cucumbers or cooked like squash. Probably *Luffa Aegyptiaca*

We doubt if the effort would prove economical, but it would certainly be entertaining.

This singular plant is grown for four distinct purposes—for ornament, curiosity, sponges, and food. The fruit is said to attain an extreme length of nine feet in the tropics, but in northern gardens it is usually one or two feet long. Fig. 190 shows it in the vegetable stage and Fig. 192 in the sponge stage, before the husk is removed. It probably has no value as a vegetable for this country, but in the tropics and in China and Japan the young fruits are eaten in three different ways: sliced, like cucumbers, or in soups, or cooked like squash.

The cultivation of the dishcloth gourd is like that of the cucumber. It cannot stand a frost and therefore the seeds should be sown outdoors about May 10th in the latitude of New York, or started indoors in March if one wants a bigger crop. The vines ordinarily run ten or fifteen feet, and if one cannot afford ten square feet of ground space, it would be better to give the vine some support, such as that of a tree.

The accompanying pictures were taken in the garden of Mr. Charles Richardson, of Pasadena, Cal., by Mrs. Helen Lukens Jones, who sends the following notes: "The seeds of these remarkable plants were gathered in South African jungles by Mr. Walter Richardson during one of his hunting and exploring expeditions. [They might have been gotten for five cents from American seedsmen.] In California the fruits average ten inches in length and three in diameter. In the late fall the leaves drop from the vines, and as they hang on the naked vines exposed to sun and wind the sponges become dry and ready for harvesting. At this stage the outer coating is brown and hard as a walnut shuck. When this shuck is removed, a fibrous, cream-colored sponge is revealed. Through the centre of this sponge are three lengthwise compartments in which are black seeds about the size of an ordinary bean. These sponges are immensely strong and durable, for the fibres are so closely intertwined they form an elastic network that is almost solid. When put in water, the fibres expand and become soft after the fashion of an ocean sponge." Sponges for the trade are cured and blanched. A good sponge costs twenty to forty cents at a drug store.

There are two different species of dishrag gourd in cultivation, *Luffa Aegyptiaca* (commonly sold by seedsmen as *Luffa cylindrica*), and *Luffa acutangula*, which is cultivated by Chinamen on Long Island for their countrymen in New York City, the former being known as Sua-kwa or "water squash"; the latter as Sing-kwa, or "hairy squash," although it is not particularly hairy. The first or common species, which is here illustrated, has five-pointed leaves and the fruit is not ridged, while the second species has leaves which are only slightly lobed and the fruit has ten distinct ridges running its full length. Both are members of the cucumber family (Cucurbitaceæ), and are probably native to Asia, though they are cultivated everywhere in the tropics.

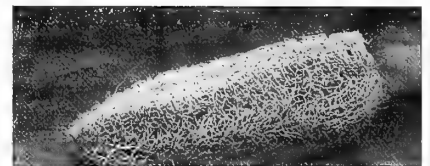
Vines for the Cellar Window

HOW TO MAKE THE CELLAR COOL AND DARK IN SUMMER AND LIGHT IN WINTER

THE builder of our house gave us a window where we did not want one. A cellar which we wished to have cool and dark was made both warm and light by a large window on the sunny side of the house. The problem was, how to shade the window and yet not cut off all the light, at the same time making it look as attractive as possible—both inside and out. This is how we solved it: We bought some strong wire netting and tacked it across the windows, then we planted Boston ivy against the foundation; the result is that in the summer we have a cool green shade from the vines which reach across. As for the winter, it makes no difference about the light, so we have gained our object; our screen appears and disappears just when it is desirable, with no work on our part. It serves another purpose, also. Our place stands alone on a hillside, and we imagine a burglar would be less likely to work his way through the thick vine and the wire than he would be to attempt an entrance through the conspicuously unprotected window of former days.

IDA M. ANGELL.

New York.



192. The vegetable sponge of the drug stores, which can be grown in any garden



193. Harvesting sponges from the vine, which has been allowed to climb a tree. The leaves of the vine drop off in autumn. The gourds are about ten inches long. These pictures from a California garden



Cacti That Are Really Hardy

THE cacti of the northern Rocky Mountains are unique. Exiled from a race of tropical and subtropical plants to survive the zero weather of our northern winters, we find not one, but four, distinct groups represented, including a dozen or more species and varieties, all of which are able to grow out of doors unprotected at Buffalo, Pittsburg, New York and Boston, and probably still farther north in favored positions. The botany of these forms is as discouraging as the cultivation of them is delightful, for these species are wonderfully variable. Often a maze of untypical or intermediate forms will threaten hopeless bewilderment to any but an experienced botanist. This is especially true of opuntias, or prickly pears.

Of our northern Colorado species, the pincushion cactus, *Echinocactus Simpsoni*, may well be considered the most notable, for in addition to its being a beautiful plant at all seasons, it has the distinction of being represented by one of its varieties at the remarkable altitude of 8,500 feet above sea level—this not merely by a chance specimen, but by thousands. At that altitude frost occurs every month in the year and the growing season is very short, so that the buds which bloom in the spring become well formed the previous autumn. The plants, also, are much dwarfed, shrinking in winter to about the level of the ground.

The common or typical form of the species is depressed-globose and is thickly set with purplish-brown interlacing spines so that the body of the plant is completely hidden. The color varies to light brown, gray and rarely to snow-white. The flowers are pink or red, arranged in a cluster or circle at the top of the plant. This grows all among the lower mountains and foothills, and sometimes on the rolling lands adjoining.

The green-flowered cereus, *Echinocereus viridiflorus*, will rank second in ornamental value, but it is so easily grown and presents such a variety of interesting forms that it is equally indispensable. This frequently branches, forming clusters, such clusters rarely reaching a diameter of more than seven or eight inches, while the pincushion cactus is sometimes considerably larger. The flowers are bright green and are quite showy, because the body of the plant and the spines also are distinctly tinged with red.

The purple mamillaria, *Cactus viviparus*, has large, erect, purple flowers and fruit like large gooseberries. The red-berried mamillaria, *Cactus Missouriensis*, has bright-red berries, which ripen the second year.

All of these are worthy of attention, and being of small to medium size, and requiring perfect drainage, they should be placed appropriately on the driest part of a rockery; or a raised bed of loose rocks and light soil may be prepared especially for them in the sunniest part of the garden. A square yard of space will accommodate two or three dozen plants without crowding, and the plants can be obtained at from one to three dollars per dozen, according to size and kind.

The prickly pears (species of *Opuntia*) are especially useful for covering rocky or very sterile ground, where nothing else will thrive, or for seaside planting. They should be used unsparingly for immediate and most satisfactory results. Eight or nine sorts can be obtained, and these furnish an interesting variety of forms, differing in habit of growth, in the color and arrangement of the spines, etc.

All of our northern cacti are free blooming, and are very certain to succeed if it be duly remembered that when growing in the moister climate of the eastern United States greater attention must be given to drainage and sunshine, especially after the blooming period, and until growth begins the following spring. Thorough ripening of the growth during the summer is essential for a good display of bloom the following spring. If the plants shrink away one-third or more by the end of summer, they will be all the better able to stand a little excess of moisture during the winter. In case of long-continued cold, rainy weather in fall or winter it would be well to shelter with a sash or boards, to turn off the water, but no other protection should be given.

D. M. ANDREWS.



Outfits of Tools for Home Gardens

GARDENING without good tools is false economy. Few people realize that a spading fork beats a spade "all hollow," that the common hoe is a very crude and unspecialized instrument (every one ought to have three different kinds of hoes), and that the wheel hoe is as revolutionary a thing in the home garden as the introduction of steam power in the world at large.

"But tools cost like sixty!" complained one of my neighbors. "Gardening is mighty expensive business."

The expense ought not to keep any gardener from investing in tools, for he ought to get it all back in one season's vegetables. Our plot varied from a sixty-foot square to an area twice that size, and it yielded from

\$30 to \$60 worth of vegetables every year that it received any decent cultivation.

A TEN-DOLLAR OUTFIT

An outfit costing about ten dollars has been the means of raising successful crops in our own garden for a dozen years or more.

Wheel hoe.....	\$6.00
Spade	1.00
Fork	1.00
Push hoe.....	.65
Watering can.....	.60
Rake .....	.50
Common hoe.....	.45
Bulb sprayer .....	.25
Trowel .....	.10
	\$10.55

Our dibber, garden lines, labels, tomato supports, plant protectors and stakes were all home-made and of old material.

Although we added roller, crowbar, and others later, and consider them indispensable to a higher priced outfit, still those in the original list can be made to do the work where economy is an object. For instance, we pounded our planted seeds with the hoe instead of using a roller; we made bulb sprayer and watering can do the work of hose and spraying outfit; we prepared places for bean poles and trellises by driving in a heavy stake instead of the crowbar. Our ten-dollar collection has lasted a number of years, and that without any special care. So far as we remember, the only thing which wore out and required replacing was a rake that had a pleasant habit of sliding off the handle when most needed.

A TWENTY-FIVE DOLLAR OUTFIT

If we were going to start again and intended to spend \$25, we should buy the following:

Roller	\$8.00
Wheel hoe.....	8.50
Sprayer	3.75
Crowbar	1.50
Spade and fork, each \$1.....	2.00
Hoes—common and push.....	1.10
Rake .....	.50
Weeder .....	.35
Trowel .....	.10
	\$25.80

For the advantages of a wheel hoe see article in February GARDEN MAGAZINE, page 28. For the good points of a roller see March GARDEN MAGAZINE, page 67. Most of the tools in these lists need no description, their use is familiar to all—gardeners and otherwise. The sprayer may not be so common. The one on the list is a hand pump, to be used with a bucket for spraying insecticides on plants and shrubs or for watering plants.

The weeder is a cousin to the push hoe and has a zigzag blade for cutting off young weeds which are just starting above ground. It is pushed backward and forward and cuts both ways. We found it very good for soft ground. To accomplish the same purpose on a harder path we used the push hoe.


A wheelbarrow is necessary in every garden, but we have not included it in our list because every country house is sure to have one for other purposes beside the garden.



If you are not interested in lawns, you will be in our profusely illustrated catalogue of

FLOWER AND VEGETABLE SEED, PLANTS, BULBS, AND GARDEN IMPLEMENTS

It contains the information you desire to know about gardening material and has the **UNIQUE FEATURE OF A WEATHER CHART PREPARED BY A WEATHER EXPERT** forecasting the conditions of each month of 1905. This will be found wonderfully helpful for your guidance in planting in knowing beforehand what the weather conditions are to be. It will be sent free on request.

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Michell's Evergreen Lawn Grass Seed

Is almost too well known to need description. It will make a rich, dark-green, velvety lawn, such as you have dreamed of. It is the best lawn grass seed that exists for general use. Price, per quart, 25 cents; per bushel (of 20 lbs.), \$4.00.

Michell's "Shaded Lawn" Grass Seed

The difficulty experienced in establishing a lawn where shade and other trees exist has been entirely overcome by the introduction of this formula. If you have never had success with grass in shaded locations you can realize your ambition with this mixture. It will never fail if properly sown. Price, per quart, 25 cents; per bushel (of 20 lbs.), \$4.00.

Michell's Permanent Pasture and Hay Grass Seed

In this mixture we have blended, after careful experimenting, the varieties of grasses that will produce an excellent pasture and insure a fine hay crop. Per quart, 20 cents; per bushel (of 20 lbs.), \$3.00.

Michell's Sea Shore Grass Seed

As those who have sea shore homes have found, the salt atmosphere plays havoc with sea side lawns. With this mixture, you can have as fine a lawn at your summer home by the sea as at the country residence. Per quart, 25 cents; \$4.00 per bushel (of 20 lbs.).

Special prices on any of the above on lots of five bushels or more.

We also have equally good mixtures for Terraces, Tennis Courts, Polo and Golf Grounds, etc.

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Vines That Bloom for a Month

LET us cast our botany to the winds and divide our vines into permanent and temporary species. The great majority of the second class are annuals or are too tender to survive a northern winter. They are specially adapted to obtain quick effects, while the slower-growing but more permanent ones are getting a start. In a few weeks from planting, these vines will be in blossom, and, if selected for succession, their attractiveness will last until "Jack Frost" comes.

TEMPORARY VINES

A few plants of *Cobaea scandens*, if started from seed sown indoors in March, can be set outdoors as soon as the ground becomes warm. Give them a few stout cords to twine upon. They produce purple, bell-shaped, long-stemmed flowers from mid-summer onward, and in light soil with plenty of sun they often climb fifteen feet and make a fairly good screen for a porch by August.

The moonflower or evening-glory (*Ipomoea Bona-nox*) is treated in much the same way and will often do better as a screen. Its large trumpet-shaped, white, often fragrant, flowers open during twilight and sometimes last until noon of the following day. They usually expand so fast that you can see them move, a bud often becoming a full-blown flower within a minute.

Morning-glories (*Ipomoea purpurea*) grow rapidly from seed sown in early spring in the open ground. In very rich soil the vines often reach fifteen feet, but flower less than in poorer ground. If neglected, the plants sometimes become weeds because of their self-sowing habits.

The hyacinth bean (*Dolichos Lablab*) attains similar heights and makes an abundant show of leaves from which long-stemmed clusters of purple flowers extend in more or less profusion.

The scarlet runner or painted lady bean (*Phaseolus multiflorus*) has long been a favorite for its brilliant red blossoms. Both grow readily from seed sown in early spring where the plants are to remain.

PERMANENT VINES

The permanent group naturally divides into herbaceous and woody species. Of the former, the perennial pea (*Lathyrus latifolius*) is a favorite old garden plant with rose-colored flowers. It will grow anywhere and everywhere, but must not be in the border with other plants, because it usurps their places and food. It is very useful in covering stones and rubbish heaps.

The ground-nut (*Apios tuberosa*) is interesting chiefly because of its chocolate-

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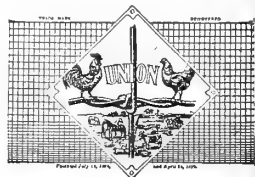
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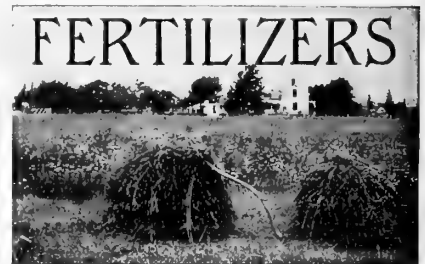
ESTABLISHED 1883
REASONER BROTHERS, ONECO, FLORIDA

colored, fragrant, pea-like flowers. Rather loose soil suits it best, but it is likely to become a pest in rockeries and gardens. It is best for wild places, especially as a ground cover under trees.

Of the woody species the Japanese honey-suckle (*Lonicera Japonica*) is a deliciously fragrant and prolific species with white or cream-colored flowers. It grows twelve or more feet tall, and is not particular as to soil or exposure. *Lonicera sempervirens*, a tall, climbing, scarlet- or orange-flowered species, and *L. flava*, a smaller kind with yellow or orange blossoms, are other favorite honey-suckles. Many species and varieties of Clematis are widely popular, especially *C. Viorna* var. *coccinea* with scarlet flowers, *C. paniculata* and *C. Virginiana*, both with white blossoms, the former fragrant. These are also attractive for the fluffy "seeds" which succeed the flowers.

The trumpet creeper (*Tecoma radicans*) is a bold, rugged climber which readily ascends trees and veranda posts and is striking because of its large tubular orange flowers and abundant pinnate leaves.

New York. M. G. KATNS.



How to Buy Potash for the Home Garden

IT MUST not be taken for granted that because the fertilizer elements, nitrogen, potash and phosphorus are separately discussed, they are to be used separately. As a matter of fact nitrogen, as explained in a former article, is the only one used alone, potash and phosphorus are used together and almost invariably in conjunction with nitrogen.

The sources of potash for fertilizer are stable manures, wood ashes and the various commercial potash salts, kainit, chloride and sulphate of potash.

Stable manures well cared for are rich in nitrogen, but strange as it may seem to many they are deficient in potash and phosphorus, and their use in quantity sufficient to supply all the potash needed involves a waste of nitrogen which of course is a waste of manure.

Wood ashes are valuable for their potash, which is in the very best form for ready plant food. Their composition varies so greatly, however, that they should never be bought except upon chemical analysis and the actual amount of plant food paid for. This means that for the inexperienced gardener they can profitably be left alone. It is well, however, to see that all wood ashes made about the home are sent to the manure heap and not to the ash pile, or better still kept under cover

Superb Magnolias



Magnolia tripetala. Tropical foliage. Pure white flowers 8 inches across. Showiest red fruit.

The first time that *all* the hardy species known to science have been offered. The exquisitely beautiful flowers and luxuriant healthy foliage of the Magnolias make this rare opportunity, for buying them in quantity at low rates, one of the richest offerings of the season. Plant them by the dozen—by the hundred, on the lawn, along the border of woodland and swamp. Hedge the garden with *M. glauca*, the Sweet Bay. The thick glossy foliage and creamy cups make an effective background for the flower border that is new and artistically good. Special offer *M.*

	EACH	PER 10	PER 100
Magnolia tripetala, 1-2 ft.	.25	2.00	18.00
M. " 2-3 ft.	.40	3.50	30.00
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M. " 5-6 ft.	1.00	9.00	80.00
M. glauca, Sweet Bay, 3 in.	.05	.40	3.00
M. " 1 ft.	.25	2.00	18.00
M. " 2 ft.	.40	3.50	30.00
M. macrophylla, 1 1/2 ft.	1.25	11.00	100.00
M. stellata, 2 in.	.08	.70	6.50
M. " 1 1/2 ft.	1.50	12.00	

M. Kobus, *M. hypoleuca*, 2 ft., at \$1.00. *M. Watsonii*, *M. parviflora*, *M. Yulan*, 1 ft., at \$1.00. *M. soulangeana*, *M. salicicola*.

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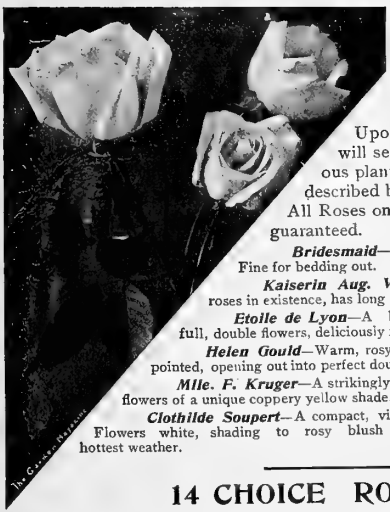
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These are very large, strong, dormant plants which have been grown two full years out-doors, and are the hardiest of all roses. I also offer 100 of the World's best roses including ETOILE de FRANCE, 85c. FRAU KARL DRUSCHKI, 45c. KILLARNEY, 50c. BESSIE BROWN, 45c. MILDRED GRANT, 55c., etc.

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until used, since the rain dissolves the valuable part.

The main supply of commercial potash comes from the mines of Germany, where it exists in practically unlimited quantity. It is marketed in the crude form under the name of kainit, and in the more concentrated forms, the muriate and the sulphate.

Kainit, containing 10 per cent. actual potash, is rather slow in its action. Where stable manure is made and it is possible to obtain kainit, a quantity (about one pound for each animal kept) may with profit be daily sprinkled about the stalls and swept with the manure into the pit. It serves to fix the nitrogen and prevent its loss as ammonia. It also serves to prevent rapid decomposition and overheating of the manure and goes to make up the deficiency of such manures in potash. Its use is valuable also in ridding the soil of many of the pests of the garden, plant lice, cut worms and the like, the magnesia it contains either killing or driving them away.

Muriate of potash is the cheapest form. It contains 50 per cent. actual potash and is the one most generally used in commercial fertilizers because the cheapest, but on account of the chlorine contained is unsuited for some crops, especially potatoes and sugar beets.

The sulphate of potash, though higher in price and containing about the same percentage of actual potash, is preferable because of its freedom from chlorine. It is the safest potash salt to use under all conditions.

If you grow anything you must use potash, but never as a top dressing. Sow it before planting and dig it in. In the form of sulphate there is no danger to the plants from over-use. The crops will use what they can and leave the rest for the next crop. But dig it in! Nitrate of soda for nitrogen in small doses may go on as a top dressing—sown as you would grass seed—any time after things have started to grow, but potash fertilizers should be dug in, and before planting.

Fertilizer dealers will sell you the potash salts if you insist on having them. When you learn how to make your own fertilizers the trouble you will be put to in buying the material and mixing them yourself will mean money saved and better fertilizers.

New York. BLANTON C. WELSH.

How to Fertilize Asparagus and Rhubarb in April

ASPARAGUS and rhubarb beds should be fed in April with some quick-acting fertilizer to make the new growth tender and juicy. Nitrate of soda is the standard fertilizer for supplying nitrogen in a quickly available form. The first rain dissolves it and carries it down. In June or July the other ingredients of a complete fertilizer (phosphoric acid and potash) should be given to build up the plant.

Apply nitrate of soda during April in two doses three weeks apart at the rate of 300 pounds per acre, which is one ounce to the square yard. Scatter it over the ground and rake the surface, or use one ounce of nitrate to three gallons of water and apply in liquid form.

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by using the IGOE TOMATO AND PLANT SUPPORTS. They will mean a more abundant crop of Tomatoes of superior quality, and more beauty and success of your heavily flowered plants, such as Peonies, Dahlias, Golden Glow, Chrysanthemums, etc. *The best and strongest support made.*



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We not only prepare plans for every form of garden and grounds, through the medium of sketches sent by mail, but send promptly men of experience at reasonable rates to advise upon every leading feature of landscape work.

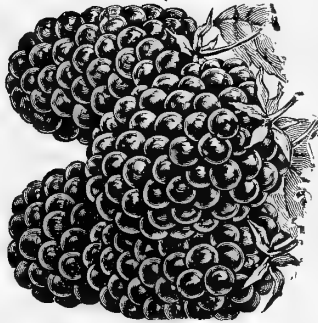
We call special attention to our catalogues, which are hardly equalled for detail, cultural advice and thoroughness. Our large catalogue is regarded as the very best practical work in this country.

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We will be prompt in taking up any garden problem, or will advise upon the smallest question which any one interested in this work may wish to bring to our attention.

Write us early and get our special views or advice and prices.

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Collections of Seeds, Etc.

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No. 9—Containing 50 selected bulbs, 8 varieties. Value \$1.40 for \$1.00 or \$1.25 postpaid.

Special Offer of Plant Food—We will send free by mail one package of our genuine Natural Peruvian Plant Food for 20c. in stamps.

FREE With any order of \$1.00 will give gratis one collection of the new annual sweet-scented tobacco plant *Nicotiana Sandera* in 8 separate colors as illustrated above. Value, 35c.

Our illustrated catalogue and full particulars of these collections mailed free for asking.

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CATHERINE C. McNAUGHTON, Chicago, Ill.

This Mellin's Food baby, when 6 1-2 months old, weighed 19 1-2 lbs. Her flesh is hard and firm and she is, and always has been, perfectly happy and well.

Mellin's Food will do just as much for your baby, and we should like to send you a sample free to try.

Mellin's Food was the ONLY Infants' Food which received the Grand Prize at the St. Louis Exposition, 1904. Higher than a gold medal.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

SUGGESTIONS



[In this department we invite suggestions from amateurs concerning anything connected with the home garden. If you have worked out the ideas, so much the better. We offer a five-dollar bill for the best suggestion that comes to us each month. Address Suggestions Department, THE GARDEN MAGAZINE, 133 East 16th Street, New York, N. Y.]

THERE is a crisp, new five-dollar bill waiting for Mr. C. L. Brown who sent the best suggestion of the month, but failed to give his address. Mr. Brown's letter follows:

"I think an agricultural paper which could publish something besides 'hot air,' which could give comprehensive, reliable, information thoroughly covering the subject it pretends to write about concisely, instead of filling up space with taffy and useless verbiage would be a great success. I attribute Prof. Bailey's success or present reputation to his work in this direction when he wrote his 'Horticulturist's Rule-Book.'"

"Why not get some competent person to compile a list of common vegetables with the information tabulated about like sample enclosed? I presume your readers would prefer such a table made for a garden to be planted and cultivated either by hand or by a wheel hoe rather than by horse-power. I think it would be particularly instructive for some good practical man to state as to each vegetable what the ordinary yield would probably be from say each 100 feet of row. This might enable your readers to have some basis from which to estimate and plan their garden."

Mr. Brown's plan is not given here as it is the same general thing as the "Planting Table for Vegetables" and "Planting Table for Flowers" published in this number, which had been prepared before Mr. Brown's letter was received, but his scheme suggested several specific improvements which have been incorporated at our request by the authors of those tables, and it is for these improvements that the award is made. Will Mr. Brown please step up and accept our thanks?

Sow Celery in April

FOR a continuous supply of young celery plants for the late summer, fall and winter crops, sow seed the first week in April, and every two weeks up to June 15th. A celery plant once checked or stunted is really not worth planting as it is almost sure to "bolt." Sow seeds in boxes having a mixture of well-rotted hotbed manure and good garden soil, two inches deep. Sprinkle the seed evenly on the surface—ten seeds to the square inch. Press down with a board and barely cover with fine sand. Press down again and water with a fine hose. Place in a cool greenhouse and transplant as necessary.

F. & F. NURSERIES

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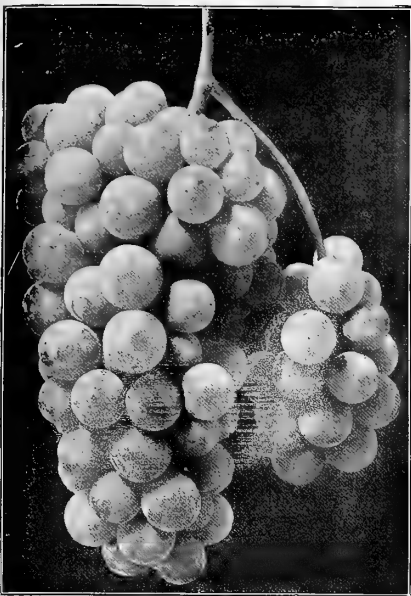
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We will send ten large vines of the best table varieties, including three red, three white and four black, for \$1.00, delivered free. Send for our elegant Illustrated Descriptive Catalogue and Price List. It will tell you how to plant, cultivate and train them.

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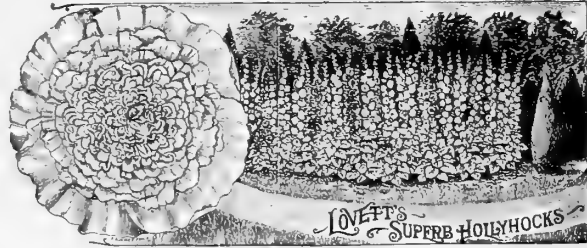
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Superb Hollyhocks



SUCH VAST IMPROVEMENTS have been made in this stately flower during recent years as to render it one of the most decorative and beautiful of Hardy Perennials. The flowers of the double varieties are very large and so double that each bloom is a large rosette. They are delightfully pure and clear in color and are closely set upon the stalks throughout their entire length. It would be difficult to imagine anything grander or more imposing than a mass of them in the border, grouped upon the lawn or among shrubbery. My seed was grown for me by a celebrated specialist at a cost of over \$5.00 an ounce and the strain I offer is positively the finest and best in the world. I offer strong field roots of these and other Hollyhocks, as follows:

Double Hollyhocks, 12 distinct colors, separate	\$ 2.25 per dozen.	\$ 8.00 per 100.
Double Hollyhocks, all colors mixed	1.00 "	6.00 per 100.
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Ex. 77, flowering Hollyhocks, a floral prodigy	1.50 "	12.00 per 100.
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The whole story of Hollyhocks is told in my catalogue of Hardy Perennial Plants, which describes also hundreds of other varieties and species of these most interesting and charming flowers.

I have thirty acres solidly planted with Hardy Perennials. That those who have never ordered of me, may at a small outlay, learn of the excellence of my Hardy Perennial Plants, I offer the following special collections by mail post-paid, all well developed plants which will bloom freely the first season.

12 Double Hollyhocks, all different	\$ 1.00.	10 Day Lilies, no two alike	\$ 1.00.
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12 Hardy Asters, no two alike	1.00.	10 Hardy Grasses, 5 kinds, 2 of a kind	1.00.
6 Japanese Anemones, no two alike	.50.	10 Kitchen Perennials, 5 kinds.	.75.

All are choicest named varieties. I will send the 10 collections by express for \$10.00, purchaser paying charges. My special catalogue of Hardy Perennial Plants is a beautiful book of 50 pages and is replete with information useful to all who are interested in these lovable flowers and is mailed free for the asking.

J. T. LOVETT, Little Silver, N. J.



Texas Rain Lilies Naturalized.

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The Lily the Fairies Love

In the South they bloom in three days after a rain. Excellent for naturalizing in lawns, and are remarkably cheap. They are fine for summer use in Northern gardens or for pot plants for window decoration. You can mow the lawn on Saturday and have it covered with white stars by the middle of the next week. Easily planted by dropping the bulbs in holes punched with a crowbar.

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The Best Plants for Hedges are The Gorgeous Dwarf Crimson Zinia Jacqueminot. The Symmetrical Kochia Scoparia Tricophylla. The Flowering Vinca or Periwinkle, The Well-Known Four O'Clock and the Dwarf Bush New Sunflower Stella. A full size packet of each, enough in each packet for 50 feet of hedge, five packets in all, 25 cents.

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By the proper selection of shrubs you can have a gorgeous display of flowers in the shrubby border or massed on the lawn from April until November. There are so many shrubs of varying merit that it is often difficult for the amateur to make proper selection. From our extensive stock, which embraces every good variety, we have made a careful selection of the best for continuous bloom. They number twenty-two, and are as follows:

APRIL AND MAY	JUNE AND JULY	AUG. AND SEPT.
2 Magnolias, pink and white	2 Silver Bells (Halesia)	1 Aralia Spinosa (Hercules Club)
2 Forsythia (Golden Bell), yellow	4 Lilacs, pink, white, purple and mauve	3 Berberis in colors, red berries all winter
2 Dogwood (Cornus florida)	2 Lonicera (Bush Honeysuckle)	1 Clethra alnifolia, pink and white (Sweet Pepper Bush)
3 Spirea, white, three varieties	1 Azalea nudiflora	2 Hydrangea
3 Deutzias, pink and white, three varieties	4 Weigela, pink, white, red and crimson	3 Hibiscus, Rose of Sharon, white, pink and crimson.
1 Flowering Almond, double pink	3 Hawthorns, white, red and pink	
1 Calycanthus floridus	4 Syringas (Mock Orange, Philadelphus), orange blossoms, four varieties	
	1 Golden Chain (Laburnum), yellow	
	3 Snow Bells, Viburnum	
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We offer this superb collection of fifty fine shrubs, which will bloom this year, for \$25

RHODODENDRON MAXIMUM

This species of Rhododendron is rapidly becoming popular, and justly so, for it is the most ornamental hardy evergreen plant in cultivation. It gives immediate and permanent effect and is beautiful every season of the year. We have given the Rhododendron more study and attention than has perhaps any other nursery, and we have solved the problem of transplanting Rhododendron Maximum with success. Our stock is grown in the open, where it becomes full and compact, and is set well with buds. We have under our sole control nearly 3,500 acres. We book orders by the carload, f. o. b. your station. We have now booked nearly 100 cars for April delivery. Special prices on carload lots.

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We have the largest collection of strictly hardy Hybrid Rhododendrons in America. Not half hardy, but only such as will stand the winter without protection. We have them in all sizes and varieties. Prices on application.

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THE MOST WONDERFUL AND EFFICIENT CONCENTRATED QUICK ACTING FERTILIZER EVER PREPARED. USE "BONORA" IN YOUR GARDEN AND ENJOY

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QUANTITY in vegetables is the result of quick growth—the less time from planting to table the better they are—but to assure this rapid growth and development they must have an abundance of Nitrogen. "BONORA" contains 17 per cent. of this necessary element, much more than any other fertilizer, in a perfectly soluble state, so that the plants absorb and use it as soon as "BONORA" is applied. The result is an abundant yield of finest quality much earlier than is possible without its use. "BONORA" is not only especially strong in Nitrogen, but is a well balanced, quick acting, all around plant food, and should be used on all flowers, shrubs, berries, small fruits, etc., etc.

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Which will remain so throughout the Summer, may be produced by the application of "BONORA" now. The Nitrogen forces a quick, healthy growth of grass, while the Phosphoric Acid and Potash, which it also contains, makes strong, vigorous, deep roots. The fact that "BONORA" is used on the *Capitol Grounds* at Washington, by the Parks of Greater New York, and on hundreds of the most beautiful country estates, is ample proof of its efficiency as a lawn maker. Here are the names of a few upon whose country homes "BONORA" is used, not only upon the lawns, but in the greenhouses and conservatories as well: Hon. Jos. H. Choate, John D. Rockefeller, Jr., Hon. Cornelius N. Bliss, A. G. Vanderbilt, J. P. Morgan, etc., etc. Would they buy it if it was not the best?

You need "BONORA." Even a small package will convince you of its value.

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Nitrogen	17 per cent.
Equal to Ammonia	20 per cent.
Potash	4 per cent.
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"BONORA" is put up in dry and liquid form as follows (one gallon makes 100 gallons when diluted with water):

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Barrels (cont. 50 gals.) " " 1.50

Put up in dry form in all size packages as follows:

1 lb., making	28 gals.,	postpaid	\$0.65
1/4 lb., "	65 pints	" "	.30
5 lbs., "	140 "	" "	2.50
10 lbs., "	280 "	" "	5.00
40 lbs., "	1,120 "	" "	20.00
100 lbs., "	2,800 "	" "	42.50
200 lbs., "	5,600 "	" "	70.00

Shrubs for Continuous Bloom

THE usual shrubby border is without flowers from June until the advent of the charming Hydrangea in September.

We can tell you how to have your grounds gay with flowers from April through to November. We can make you a plan of carefully selected shrubs that massed on the lawn or border will give you exquisite masses of color all season through, culminating in Autumn with brilliant foliage and berry effects. There will be no gaps in mid-summer when



Althea (Rose of Sharon) planted as a hedge. A shrub that flowers all Summer.

you want to enjoy your garden most. Moreoever, we can tell you the best shrubs for *special situations*, e. g., the plants that make the best hedges; shrubs for covering steep banks; for rocky places; for damp spots; for wind-swept locations, and red-berried shrubs that will make your garden cosy and attractive all winter.

Is it not better to have such expert suggestion? For example, what garden do you know that has flowers in March? We can suggest for such early bloom a perfect shrub that is covered with beautiful starry white flowers three inches across, toward the end of March—*Magnolia stellata*, totally unlike the common Magnolias, because of its exquisite star-like flowers. And do you know that rare and interesting shrub, the Purple Callicarpa, which has brilliant flowers in August and September?

It will be a pleasure for our landscape department to assist you, without charge, in suggesting effective landscape arrangements, and help you solve any difficult problems you may have. With a nursery complete in every particular we can supply every variety of Shrubs, choice Blue Spruce, Evergreens and Conifers, Ornamental Shade and Weeping Trees, Hedge Plants, Native Rhododendrons and English Hybrids. Roses, Hardy Vines, Hardy Ferns and Grasses, Old Fashioned Hardy Flowers, Trained and Other Fruit Trees, Small Fruits, etc.

These are all described in our New Illustrated Catalogue which we shall be glad to send to serious inquirers. Our Landscape Department will be pleased to correspond with parties intending to lay out or improve their grounds. The general supervision of private estates, and old-fashioned gardens a speciality. Visitors to our Nurseries are always welcome.

BOBBINK & ATKINS,

Nurserymen, Florists and Landscape Gardeners,

RUTHERFORD, N. J.

DREER'S SPECIALLY... PREPARED ROSES

for Garden Culture

All carefully selected 2-year-old field-grown stock that will produce a full crop of flowers this year. In our GARDEN BOOK we offer over 150 of the choicest Hybrid Perpetual, Hybrid Tea, Tea, Moss, Sweet Brier, Climbing and other Roses. We especially recommend our collections as under:

TWELVE BEST HYBRID PERPETUALS

Anna de Diesbach, Baron de Bonstettin, Baroness Rothschild, Gen. Jacqueminot, Gloire Lyonnaise, Magna Charta, Margaret Dickson, Mrs. Crawford, Mrs. Laing, Paul Neyron, Prince Camille de Rohan, Ulrich Brunner. Price \$4.00 per doz., strong 2-year-old.

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Killarney, Belle Siebrecht, Bessie Brown, Cap. Christy, Caroline Testout, Ideal, Kaiserin Augusta Victoria, La France, Souv. de Wootten, Gruss an Teplitz, Helen Gould, Viscountess Folkestone. Price \$5.00 per doz., strong 2-year-old.

All are fully described in our GARDEN BOOK, which is acknowledged to be the finest and most complete catalogue of Seeds, Plants and Bulbs published. A copy will be sent *FREE* to those who mention this magazine.

HENRY A. DREER, 714 Chestnut Street, Philadelphia, Pa.



A Record-Breaking Nasturtium

IHAD an unusually large plant of dwarf nasturtium last season. It was so large that it crowded out all the other plants in its vicinity.

On the twelfth of May I put ten seeds of a dwarf nasturtium in a row in the garden between two rows of vegetables which were four feet apart. The seeds were one foot apart in the row.

The soil and the exposed location seemed just suited to their needs, for they thrived from their first appearance above ground. The one which proved such a wonder was extra large and thrifty from the start, and especially attractive, as the foliage was a delicate apple green. Before long the plants on either side began to be crowded by the growth of this one, so I pulled them out; two or three weeks later it became necessary to dispose of the next pair of plants; then the vegetables on either side fell before the onslaught. Drought had no effect in checking the spread; for when small bushes near it withered and died during a hot spell when I was away and no one took sufficient interest in them to water them, this one seemed undisturbed and devoted its energies to covering ground.

On the second of October when the photo-



The dwarf nasturtium (*Tropaeolum minus*) is one of the best hardy annuals for quick results. This one grew 22 inches high and six feet in diameter

graph was taken, the plant was twenty-two inches high and five feet across. There were at that time but few blossoms, all the energy had apparently gone into leaves, but it was full of buds. By the twentieth of the month it was a mass of bloom and had increased to six feet in diameter. A week later it was killed by the frost, but had shown no signs of diminished ardor. A whole flower bed eighteen feet around is a large one, and when one thinks of a single plant occupying so much space it seems incredible.

The bush shown in the photograph, immediately by the side of the big one, is six feet in circumference and is unusually large for a dwarf nasturtium, but seems a veritable pigmy in comparison with its huge neighbor.

No unusual attention was paid to this plant, except on the first of August I dug up the ground about it and piled the earth firmly about the roots; after that it was left alone and it has no water except the rain. No fertilizer was applied except the regular top dressing that had been scattered over the entire garden in the spring; so the bush is not the outcome of a forcing process.

Long Island.

GRACE L. WEEKS.

JAPANESE IRIS

Some years ago a set of Japanese Iris (*I. Kämpferi*) were sent to us from Japan to test, which were said to be identical with the collection in the Royal Gardens. We cannot vouch for this statement, as we have never been in Japan, but we have never seen another collection in America or Europe that would equal it in any way. The collection contained many colors and varieties we had never seen before, and the flowers were of remarkable size and beauty. When these Irises were in bloom they excited the greatest admiration and enthusiasm, and it was hard to convince people that these unique and exquisitely beautiful flowers were as hardy as apple trees, and as easily grown as potatoes. They will thrive in any good garden soil, but if the soil is made very rich and deep, and flooded with water for a month before and during their blooming season, they will produce flowers of a wonderful size, sometimes ten to twelve inches across. These Irises should be planted in full exposure to the sun.

Since the above collection was received we have annually added to it the newest varieties from Japan and new varieties selected from thousands of seedlings grown on our own grounds, until we now have what is unquestionably the finest and most complete collection of Japanese Iris in the world.

PRICES OF JAPANESE IRIS

50 Named Varieties, 35 cts. each, \$3.50 per doz., \$6.50 for 25, \$20 per 100; a few rare varieties, 50 cts., 75 cts. and \$1.00 each. American-grown, fine mixed, \$1.25 per doz., \$6 per 100, \$50 per 1,000.



THE SPRING-TIME GLORY OF THE JAPANESE IRIS IN JAPAN (From The Country Calendar)

THESE GLORIOUS IRISES SUCCEED JUST AS WELL IN AMERICAN GARDENS

We have the largest, finest and most comprehensive stock of Hardy Plants in America, including three hundred varieties of the choicest Pæonies, one hundred varieties of Japanese and European Tree Pæonies, a superb collection of old English garden and wild roses; and also an unsurpassed collection of named Phloxes. Our illustrated catalogue describing these and hundreds of other Hardy Plants, Trees and Shrubs will be sent on request.

"A Plea For Hardy Plants," by J. Wilkinson Elliott, contains much information about Hardy Gardens, with plans for their arrangement. We have made arrangements with the publishers of this book to furnish it to customers at a very low price. Particulars on request.

ELLIOTT NURSERY CO.,

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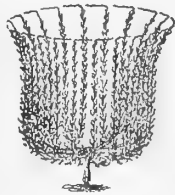
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Pittsburg, Pa.

A real lover of the garden can't afford to be without

Trained Fruit Trees

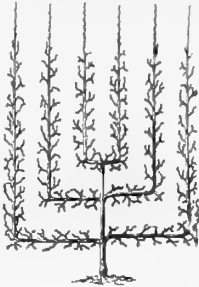
JUST think how beautiful such a "correct" trained tree looks the whole year; in winter the beautiful shapes, in the spring the beautiful blossom effect; in the summer the development of the leaves, in late summer and fall they are loaded with the choicest and finest fruit ever seen. These trees are not only ornamental to the grounds and grown for luxury, but also are very thankful for your little attention you gave them during your spare time, in paying back with their abundance of fruit.



Another great advantage they have over other trees is the small space they require. They need not to be grown only on the wall, they can be grown also in the open. Nothing else can decorate your house better and to such a great advantage as these trees, as they are not directly planted on the wall as all other vines and plants which draw the moisture and thus keep the house damp.

Any side of a house can be planted with these trees, if the proper kind of fruit is chosen and then will bear plentifully. These trees can be had in Apples, Pears, Cherries, Peaches, etc., in shapes like cuts or in other beautiful shapes, only in the choicest and best bearing varieties.

Standard Currants and Gooseberries, the most productive and effective shape for this kind of fruit. Standard Roses.



The Verrier Palmetto

Erection of Wall Espaliers as well as Trained Fruit Tree Gardens and thoroughly taking care of them through the season a specialty.

Send for illustrated price list

OTTO LOCHMANN & CO.

Trained fruit tree specialists and sole agents for U. S. WALLINGFORD, - Delaware County, - PA.



Two Flowering Raspberries Without Prickles

THERE are at least two members of the raspberry family that are worthless for fruit, but worth cultivating as ornamental shrubs. Both have beautiful flowers, and have none of the spines that are a nuisance in the varieties with edible fruits. Moreover they differ in having simple (not compound) leaves which in outline suggest those of some of the maples.

The common flowering raspberry of the East (*Rubus odoratus*) is a soft-wooded shrub, which grows three to six feet high, producing bold and luxuriant masses of foliage, and purple flowers an inch or two across. These look somewhat like single roses. The red fruit (sometimes called thimble berries) are flat and edible, but usually dry and always inferior to ordinary raspberries. This shrub multiplies rapidly and is therefore cheap. Cut out the old wood every year, just as you should for any ordinary raspberry, or it will spread too much.

The Rocky Mountain flowering raspberry (*Rubus deliciosus*) is not likely to become common, unless simpler methods for its propagation are discovered. It is taller and more graceful than the Eastern species. The canes are perennial, hard-wooded and freely branched. The twigs are rather stiff, but always arching, so that no harsh outlines are presented. The leaves are smaller, rounded, three- to five-lobed; strongly veined and of firm texture. The flowers, which are snowy-white, resemble single roses in size and form, and are disposed over the whole plant. Its foliage effect is charming, and even after its autumn yellow is succeeded by the bare brown twigs the plant is not unattractive. The fruit is purple and like a flattened raspberry, sweet but not very palatable; relished by birds and chipmunks. Its home appears to be limited to the canyons of Colorado. It grows along the streams and in shaded gulches, but is quite able to hold its own on a dry rocky hillside exposed to the rays of a rarely clouded sun. It thrives where most other shrubs can grow, and when once established far outranks the majority in ability to withstand drought and exposure and other adverse conditions. It transplants as easily as a rose, and responds equally to liberal treatment, making itself entirely at home under the conditions that prevail in an ordinary garden. In cultivation it sometimes produces semi-double flowers.

Colorado.

D. M. ANDREWS.

We make Tanks and Towers

for country and suburban homes insuring a plentiful supply of water for every purpose.



W. E. CALDWELL CO.,
LOUISVILLE, KY.

Your Own Water Supply

from a flowing spring or stream of water. We can install a plant which will pump all the water you need, anywhere you want it. We will put in a Rife Hydraulic Ram which never waterlogs, needs no fire, steam, wind, gas or gasoline; needs no attention whatever and costs absolutely nothing to operate.

We install plants to supply homes, railroad tanks, factories or towns, for irrigation or anything needing water supply.

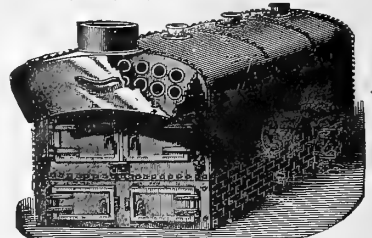
No Pay till You're Satisfied

Write us and tell us what you need. It places you under no obligation to let us tell you what we can do.

POWER SPECIALTY CO., Liberty and Greenwich Sts., N. Y.

Steel Plate Greenhouse Boilers

NO CAST IRON SECTIONS TO CRACK. NO JOINTS TO LEAK. SAVE 25 PER CENT. OF FUEL.



Water space all around, front, sides and back.

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Sixty Cents' Worth of Seeds Free

Send us 25c. for 10 packets vegetable seeds, including Beet, Cabbage, Carrot, Cucumber, Lettuce, Onion, Parsnip, Radish, Spinach, Tomato, very choicest varieties, and two packets Superb Sweet Peas. Return any one of the packets, when empty, and we will accept it as 25c on any order amounting to 50c. or more, making the above absolutely FREE. Catalog on request.

STANDARD SEED CO., VALPARAISO, INDIANA.

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NOW READY

You can well afford to consider our stock, business facilities and prices before placing your spring order for

Ornamental or Fruit Trees, Evergreens, Shrubs, Vines, Roses, Herbaceous Plants, etc.

We cordially invite all who are interested to visit our Nursery.

THE ELM CITY NURSERY CO.

New Haven, Conn.

Rosedale Nurseries

SPECIAL PRICES ON LARGE ORDERS

We handled one order of 10,200 trees because our previous shipments had been so satisfactory. For the same reason we received from a noted rosarian an order for rose plants amounting to \$1200.

OUR CATALOGUE GIVES SIZES and PRICES of all the best varieties suitable to adorn a large estate.

ROSES: Hybrid teas, H. P. rugosa, climbers 2 and 3 years.

TREES: Fruit and ornamental up to 20 feet.

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GLADIOLI: America, Choice New Pink, Princess, Groff's Hybrids and others.

DAHLIAS: Best old and new.

HARDY PERENNIALS: Alpine Flowers, Foxgloves, Delphiniums, Peonies, Phlox, Iris, Hardy "minus," Hollyhocks, etc.

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Evergreen
and
Ornamental
Trees,
Shrubs,
Vines,
Etc.

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WAUKEGAN, ILLINOIS

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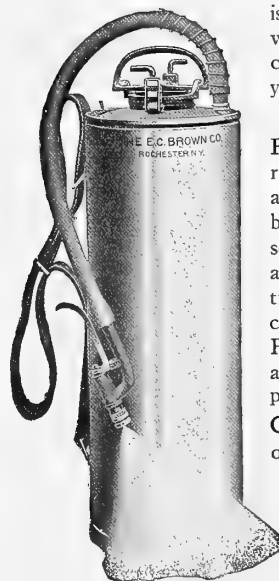
will iron your household linen **better, easier, cheaper,** and in **one-tenth the time.** Simply light the gas in the iron, feed the goods into the machine, turn the handle, and the ironing is done ready for folding.

Reasonable in price. Write for booklet.

AMERICAN IRONING MACHINE CO.

179 Washington Street, Chicago, Ill.

THE "AUTO-SPRAY"



AUTO-SPRAY No. 1.

is the one perfect spray pump for hand work. 15 seconds work at its plunger charges it with power enough to run your hose 15 minutes. We make it in **40 STYLES AND SIZES**

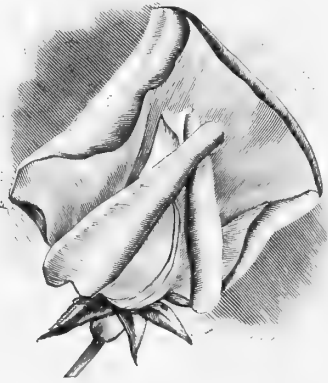
From hand atomizers up to power rigs. Style No. 1, here shown, is almost ideal for all-purpose work. A brass cylinder holding three gallons of solution and one of compressed air, and two pumpings will discharge entire contents. Solid brass pump, stop cock, nozzles, etc. Our patent Auto-Pop valve controls spray perfectly and absolutely prevents clogging. Complete with hose, nozzle, etc.

Only One Auto-Spray, but numerous imitations. Get the genuine.

Used at State and Government Experiment Stations, on estates of Vanderbilt, Astor, Hill, etc. Ours is the most complete line of hand and power sprayers in America.

Write for free catalog and copy of most comprehensive and valuable spraying calendar ever issued. All our products fully warranted.

E. C. Brown Company, No. 34 Jay St., Rochester, N. Y.



New Sweet Peas

For 25 Cents we will mail, postpaid, one regular retail packet each of

The New Gigantic "Orchid-flowered" JOHN INGMAN, the best and most beautiful rose-crimson, as shown on Colored Plate in our New Catalogue; FLORA NORTON, the best clear light blue,—and JANET SCOTT, largest and most lovely deep bright pink.

Also one full-size packet (seventy to ninety seeds) each of DOROTHY ECKFORD, the largest white,—the famous pink-edged white BURPEE'S DAINTY—the love y blended pink and buff AGNES JOHNSTON,—the largest pure red KING EDWARD VII, and a large packet of the unequalled special new Giant-flowered BURPEE'S BEST MIXED FOR 1906.

In each Collection five include one up to date 1 centon of 1906, and also one packet of a brand new special strain of the same color, for 1907. The latter is a new variety, and the 1907 variety imparts such an attractive appearance to a bouquet of Sweet Peas.

25 Cents buys the Complete Collection of Nine Packets postpaid. Five Collections mailed for \$1.00.

For 50 Cents we will mail all the above and also one regular packet each of Burpee's

Re-located "Princess of Arden," the new Marchioness of Choindeley, best buff and pink—Mrs. George Higginson, Jr., the charming new "sky blue,"—Miss Willmot, large orange-pink,—Burpee's Navy Blue, the best dark blue; Burpee's Sunproof Salopian, and a large packet of the New Gigantic "Orchid-flowered" Seedlings of Countess Spencer. In all, 16 pkts. for 50 cents, a truly magnificent Collection!

For One Dollar we will send all the above and also one regular fifteen-cent packet each of the Fine Cousins Spencer

and Helen Lewis, shown on Colored Plate, also David R. Williamson, and the remarkable Burpee's Earliest White, now first offered; also a ten-cent packet each of the new Helen Pierce, Scarlet Gem, and Burpee's Earliest Sunbans,—also a regular packet (75 to 100 seeds) of Jessie Cuthbertson,—Hon. Mrs. E. Kenyon,—Mrs. D. Galtie,—Othello,—Eckford's Sadie Burpee, and Prince of Wales.

In all these Twenty-nine Packets, at regular rates "per pkt." amount to \$2.40, but all are included in this Special DOLLAR BOX,—mailed postpaid, to any address in the United States.

Mention THE GARDEN MAGAZINE and we will include another Grand New Novelty, making 30 pkts. in the Box, worth \$2.05 for only One Dollar! If not already received, be sure to ask for the New THIRTIETH ANNIVERSARY EDITION of

BURPEE'S 1906 Farm Annual

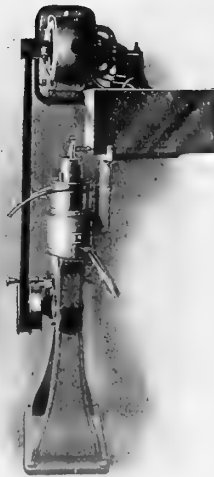
Long known as "The Leading American Seed Catalogue,"—this is now brighter and better than ever before. An elegant book of 168 pages, it tells the plain truth about the Best Seeds That Grow!

WRITE TO-DAY! This advertisement will not appear again

W. Atlee Burpee & Co., Philadelphia

COMPLETE
ELECTRIC LIGHT PLANTS
RICHARDSON ENGINEERING CO.
HARTFORD, CONN.

POULTRY SUPPLIES
We sell everything the poultryman needs. Incubators, Brooders, Feeds, Tonics, Feeders, Fences, Bone Cutters, Egg Boxes, etc. Write to-day for a free copy of our Poultry Supply Catalogue. You'll be surprised how much you can save by buying all your supplies from one place.
JOSIAH YOUNG,
23 Grand Street, Troy, N. Y.



Improve Your Dairy

No matter how good a herd of cows you have, or how well they are taken care of, or how carefully they are fed, your efforts are more or less wasted if the milk, the result of it all, is not taken care of in the best way possible.

Before cream or butter can be obtained the milk must, of course be skimmed, and to do the skimming most effectively you need a

U.S. Cream Separator

in your dairy. If the gravity or setting method is now used, a U. S. will increase your butter yield from 1-4 to 1-2. This is, if the skimmed milk from the old way was to be run through a U. S. Separator it would take out from 1-4 to 1-2 as much cream as was obtained by hand skimming.

Now there are other cream separators which will effect a saving over gravity system, but because the U. S. Separator holds the **World's Record** for clean skimming, it is a greater saver and bigger moneymaker than any other.

We want to tell you how this record was made, and what it means—our attractive new catalogue will do it, and at the same time fully explain the construction of the U. S. We'll be glad to mail you a copy on request. Write us now, addressing,

U. S. Separator run by Electric Motor

VERMONT FARM MACHINE CO., Bellows Falls, Vt.

Eighteen centrally located distributing warehouses throughout the U. S. and Canada.



San Jose Scale on a Pear.

L. S. & S. "HORICUM" L. S. & S.

TRADE MARK

THE SAN JOSE SCALE KILLER

For Fall or Spring use

We aim to kill scale and not trees. One spraying will not kill all the scale. Many of them get under the rough bark. They are very minute, but their multitude makes the San Jose Scale a plague like the plagues of Egypt.

"Horicum" is Simple, Strong, and Ready For Use

SOLD BY SEEDSMEN. SEND for pamphlets on Bugs and Blights, worth having, to

HAMMOND'S SLUG SHOT WORKS

FISHKILL-ON-HUDSON,

NEW YORK



Chamilton Muster

The Problem of Spraying

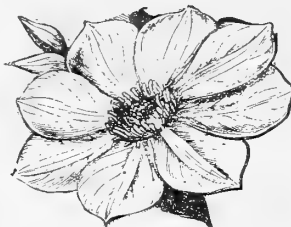
SEND for Leggett's Spray Calendar, illustrated, a free booklet to those interested, showing the whole subject at a glance: what to apply and when to do it. This concise information will be of the greatest value to any grower. A postal card will bring you the booklet. The

DUST SPRAYERS

are the most effective, easiest and swiftest for all vegetables and fruits. Two acres of potatoes per hour; no barrel of water to haul; does the work of a power machine; dusts two rows as fast as a man can walk; adjustable. Will not get out of order and will last for years.

LEGGETT & BRO., 301 Pearl Street, New York City

CLEMATIS FOR SPRING PLANTING



The most gorgeous flowering vine for porch and trellis. It will festoon the veranda with a profusion of large, white red or purple flowers.

We can supply fine 2-year-old, strong, heavy field-grown roots which will blossom next August.

VARIETIES: Henryii (white); Madam Andre (red); Jackmanii (purple), Price 50c. each; \$6.00 per dozen.

Get Our GARDEN COLLECTION or SMALL FRUITS for \$2.75 by mail to any address, intended to plant a large garden 68 strong plants, Grapes, Currants, Berries, etc.

Send for catalogue.

H. S. WILEY & SON, Drawer 47, CAYUGA, N. Y.



**SPECIAL PRICES
UP TO MAY 15th**

On Specimen Evergreens, Rhododendrons, Kalmias, Hardy Azaleas (in ten sorts). Write for quotations and catalogue

**COTTAGE GARDENS
COMPANY,** QUEENS
LONG ISLAND, N. Y.



GARDEN VASES
IN CAST IRON AND BRONZE

Made in a great variety of styles and designs to harmonize with any garden scheme. Also, Lawn Fountains, Aquaria, Statuary, Settees and Chairs, Tree Guards, Gas and Electric-Light Posts and Lamps.

WE issue separate catalogues of each of the above, which will be sent on request. Address ORNAMENTAL DEPARTMENT.

THE J. L. MOTT IRON WORKS
84 to 90 BEEKMAN STREET, NEW YORK CITY

**Horsford's Hardy
PLANTS**

from cold Vermont are the best for cold climates. Never go South, young man, to buy your nursery stock, if you want constitutionally hardy things. A plant reared in Vermont should thrive in any place where white folks can live. Only the kinds we can grow here are ironclad for vigorous winters. My new catalogue (spring and supplement in August) offers about a thousand of the best things for permanent planting, and when you have the best you don't have to replace every season. The prices are very low considering the quality of the stock, and my motto is "Money back if you don't like the goods." Mailed free to all who send the postage, a two-cent stamp.

FREDERICK H. HORSFORD
CHARLOTTE, VERMONT



**JAPANESE TREE
Peonies**

We have just received from our Japanese agent the finest collection of these handsome plants that were ever imported. They should be grown in every garden; the flowers measure 6 to 8 inches in diameter, and range in color from the most delicate pink to the brightest scarlet, lavender, maroon, pure white, and delicate lavender. They are very hardy and will stand our severest winters.

Price each, \$1.25. Per dozen, \$12.00. Collection, 20 varieties, \$18.00
Delivered free anywhere in the United States

Japanese Herbaceous Peonies

In 12 varieties, large clumps that if planted early will flower this year.

75 cents each. \$8.50 per dozen

Delivered free anywhere in the United States

Hardy Herbaceous Peonies

Small roots that, with proper cultivation should flower next year, in collections of 12 named varieties.

25 cents each. \$2.75 per dozen

Delivered free anywhere in the United States

Our illustrated catalogue of *Vegetable, Flower and Grass Seeds, Bulbs, Plants and Implements*, also giving full descriptions of varieties of Peonies listed above, mailed free.

50 Barclay St. **STUMPP & WALTER CO.** NEW YORK

Canada Unleached Hardwood Ashes

Are superior to any other fertilizer for use on lawns, and will produce a luxuriant growth of grass even under heavy shade trees. They will improve your crops without forcing an unnatural growth which exhausts the soil

J. STROUP, SON & CO. - - 542 Tremont Building, Boston, Mass.

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GREENHOUSES



GRAPERIES

CONSERVATORIES

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Horticultural Architects and Builders

AND LARGEST MANUFACTURERS OF Greenhouse Heating & Ventilating Apparatus

Send for our Illustrated Catalogues on Greenhouse Construction and Heating

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Beautiful Lawns

Are the pride of the home; why disfigure with ugly clothes posts.

Hill's Lawn Clothes Dryers

hold 100 to 150 feet of line, take small space, and are quickly removed when not in use. Make a neat and tasty appearance, last a life-time.

More than two million people use them.

No traveling in wet grass. No snow to shov. The line comes to you. Also

Balcony and Roof Clothes Dryers.

If not found at your hardware store, write:

HILL DRYER CO.

359 Park Ave., Worcester, Mass.

Write for Cat. 39



MY CATALOGUE of Trees, Plants, Vines, Asparagus

Roots, California Privet, Nitro-Culture, Hydrated Lime to kill scale, and Jersey red pigs.

ALL FREE. WILL BE OF VALUE TO YOU.

ARTHUR J. COLLINS, - Moorestown, N. J.

Rhodes Double Cut Pruning Shear

RHODES MFG. CO.
431 West Bridge St., Grand Rapids, Mich.

Cuts from both sides of limb and does not bruise the bark.
We pay Express charges on all orders. Write for circular and prices.



BULL-FROG BRAND LAWN HOSE

"The Kind That Lasts"

This is the kind you get when you buy hose bearing our name and brand. **FLORIDA** makes a big mistake in buying or buying hose for green-house use, when for the same cost they can buy **Bull-Frog Brand Seamless Tube Hose** which is made with an extra heavy wall and especially designed to withstand short turns without kinking. Where a large volume of water is required and must be conveyed a great number of feet, we recommend 3/4 in. four ply. For short distances and through aisles there is nothing better than 3/4 in. three ply.

SPECIAL OFFER: To widely distribute Bull-Frog Brand Seamless Tube Hose we will, if your dealer does not handle it, ship you upon receipt of price, on **50 DAYS' FREE TRIAL** 50 feet of 3/4 in. four ply with brass couplings for \$5.00, or 50 feet of 1/2 in. four ply for \$3.00, express prepaid east of the Mississippi and north of the Tennessee line, equalized beyond. **SAMPLES FREE.** Section of Bull-Frog Brand Seamless Tube Hose and section of old style lapped tube that you may see at a glance the advantages Bull-Frog Brand offers. Dealers should write and get best of our advertising.

The Toledo Rubber Company, 417 Summit St., Toledo, O.
Established, 1890.
References: Any bank in Toledo.
This is the kind you no doubt have bought in the past.



Why and How You Should Whitewash Peach Trees

PERHAPS the greatest trouble in peach growing is that the buds start to grow too soon, so that the delicate pistils are nipped by late frosts and hence a full crop of flowers is followed by a complete failure of the fruit crop. Some years ago, Prof. J. C. Whitten, horticulturist of the Missouri Experiment Station conceived the brilliant idea that peach buds could be held back by spraying them with lime, on the principle that light is reflected from a white surface, whereas it penetrates and heats a dark-colored object. He found that twigs containing much purple absorbed heat enough to raise their temperature on sunny days in winter to fifteen degrees above the temperature of the air, and in one case, where a high slope reflected part of the sun's rays on the trees, he observed a rise of twenty-three degrees. The experiment station has repeatedly saved a peach crop by whitewashing certain trees, while other trees of the same variety right next to them, but not whitewashed, had their fruit buds killed. Very few commercial fruit growers in the great Ozark region use this method because the winter rains often wash off the lime, and it is difficult and costly to get through the muddy orchards with the spraying machinery. The fruit growers of Ontario, however, have had remarkable success. They spray the trees at the approach of cold weather, with the lime wash, choosing a time when it will freeze on the trees as it is applied. In this way, they have no trouble in getting as thick a coat as they want. In regions where the winter is uniformly cold, the lime stays on fairly well.

The one feature of this work that promises to have the greatest commercial value is that Professor Whitten is breeding new varieties of peaches with the hope of securing some that will have no purple coloring matter in the twigs. The Ozark region has several varieties, with only a small percentage of purple coloring matter, especially the Ortiz and Snow, which have pale yellowish-green twigs. "All peaches with this color of twigs with which I am acquainted," writes Professor Whitten, "are exceedingly hardy and have fruited in this section of the country when no other varieties bore fruit at all. Most of them, however, have comparatively small, undesirable fruit. We are crossing them with the finer fruited varieties. None of the seedlings which we have thus originated are old enough to bear."



NITRATE OF SODA

is so quickly available, or so positive in its results for the vegetable garden, on the lawn, for shrubbery or trees as a top dressing of

NITRATE OF SODA (THE STANDARD FERTILIZER)

Send your name and address on **Post-Card** and I will send you **"Food for Plants"**

a most valuable book dealing with the use of Nitrate of Soda as a fertilizer, giving detailed information covering a long list of trials at Agricultural Experiment Stations throughout the United States and on all sorts of crops.

WILLIAM S. MYERS
Room 163, 12-16 John Street, New York

"NICOTICIDE"

The Standard Fumigant of America

Unequaled for Spraying

COST OF

FUMIGATING,	Less than 5c. per
	1000 cubic feet.
SPRAYING,	1c. per gallon.

ENDORSED BY:
Professor L. H. Bailey, Cornell University.
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Richter & Barton, Madison, N. J.
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Sold by all Seedsmen

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Copper Sulphate (Blue Vitriol) for the Bordeaux Solution, Sulphur, Brimstone, Nitrate of Soda, Sulphate of Ammonia, Phosphoric Acid, Grafting Wax, Dry Bordeaux Mixture, Paris Green, and Special Preparations for the San Jose Scale, etc., etc.

Buyers will find a very considerable saving in our prices as compared with those quoted by jobbers.

THE CHARLES E. SHOLES COMPANY
154 Front Street, New York
Also proprietors of the INDUSTRIAL LABORATORIES
(Dr. J. E. Teeple, Director)

Brass Sprayers Last Longest

And Are The Cheapest To Buy

Price, 83.50 and upward. Make your labor and investment earn a good profit by destroying the insect pests and plant diseases which cause so much loss. These sprayers may also be used for applying whitewash and cold water paints, spreading disinfectants, cleaning wagons, curing surface diseases on cattle, chickens, and many other purposes. **Sprayers may be returned at our expense if they are found defective.** Send for catalogue.

DAYTON SUPPLY CO., Dayton, Ohio.



CACTUS DAHLIA

DAHLIAS FOR THE GARDEN

Flowers from July to Late Frost

We offer this magnificent collection of the four most important types, decorative, show, cactus and single, with an astonishing range of colors; all blooming first season.

1. **Mrs. Roosevelt** (Decorative)
Immense flower of the most exquisite delicate rose.
2. **Clifford W. Bruton** (Decorative)
Finest canary yellow.
3. **Henry Patrick** (Decorative)
Pure waxy white, pointed petals.
4. **Wm. Agnew** (Decorative)
Finest glistening scarlet—crimson.
5. **A. D. Livoni** (Show)
Soft clear rose, great bloomer.
6. **Kriemhilde** (Cactus)
Exquisite shell pink, twisted petals.
7. **General Buller** (Cactus)
Rich velvety crimson, each petal tipped white—splendid.
8. **Perle de la Tete d'Or**
Grandest white decorative, resembling a rich, white chrysanthemum.
9. **20th Century**
Grandest single variety, rosy crimson tipped white, changing to almost pure white.
10. **Zulu**
Jet black changing to deepest maroon.

SPECIAL: We furnish, EXPRESS PREPAID, strong field roots of any one of above for 20 cents, or six for \$1. The collection of 10 will be sent prepaid for \$1.50.

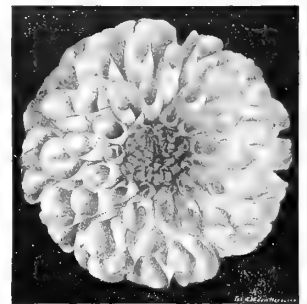
We also offer Dahlias, choice assortment of colors, in strong undivided field roots per dozen \$1.00, per 100, \$6.00, not prepaid.

Our March offer, page 102 THE GARDEN MAGAZINE for March, holds good for April.

With every collection we send free a package of rare Dahlia seed.

On application we mail you our 28th ANNUAL CATALOGUE of flower seeds, bulbs, plants, etc.

Send for our new
Special Dahlia Catalogue



Mrs. Roosevelt blooms are 6 inches to 8 inches

H. H. BERGER & CO., 47 Barclay Street, New York City



A snapshot of our young apple orchard seven years old. One tree produced one and a half bushels the third year. Same trees with over one barrel this year.

Are You Waiting For Advice?

If So, Write Us

Experience is the best teacher. We have had years of it and will give the benefit to you. Let us be of assistance. . . .

GET YOUR ORDER IN NOW

We have a full assortment of choice Nursery Stock in Fruit, Forest and Ornamental Trees ready for Spring planting, also Shrubbery, Roses, Asparagus, Vines, Small Fruits, Herbaceous Plants, and California Privet. Everything for the Ornamental Planting of Avenues, Parks, Lawns, Flower or Fruit Gardens, etc. Large Tree Planting and Landscape Gardening a specialty with us. Send for our Free catalogue. Address

The STEPHEN HOYT'S SONS CO.,

Telephone, 148-2 South Norwalk, Conn.

NEW CANAAN, CONN.



An exquisite effect produced by massing Foxgloves.

Hardy Flowers for the Old-Fashioned Garden

Charming Foxglove for massing in the shrubbery; stately Iris, Campanulas, Columbine, Phlox, Golden Glow, Trilliums, and all good Hardy Herbaceous Perennials for the garden border

Native Perennials for the Wild Garden

Our stock of native plants is based largely upon the rich, wild flora indigenous to this soil. Having been given nursery treatment, they are now unequalled for making beautiful wild gardens. Have you ever tried a wild garden? Located in some secluded spot, it will prove a continuous delight to you. Let us help you make one this year.

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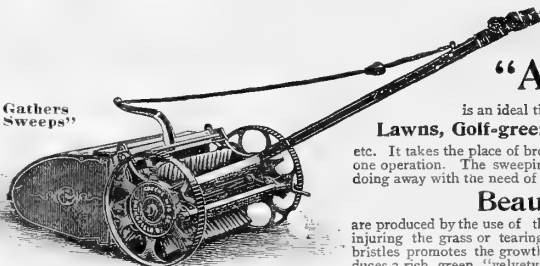
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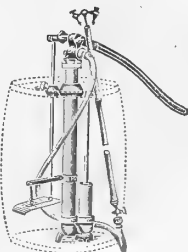
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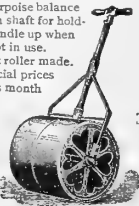
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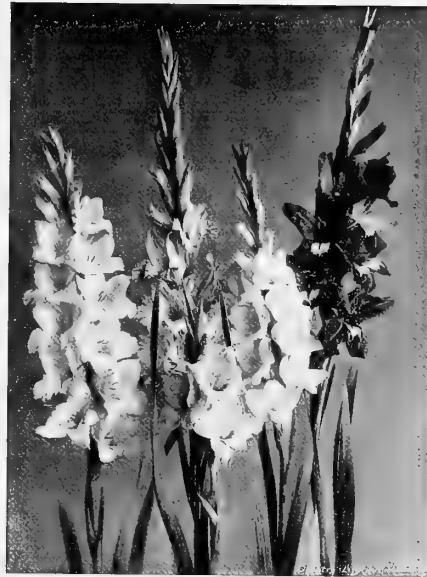
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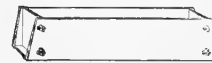


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Successful Fruit Culture. By Samuel T. Maynard. Orange Judd Company, New York, 1905. 4 3/4 x 7 1/2 inches; 274 pages. Price, \$1.

Far inferior to Bailey's "Principles of Fruit Growing." Gruesome old pictures. A poor job of book-making.

A Gardener's Year. By H. Rider Haggard. Longmans, Green & Co., New York, 1905. 5 1/2 x 8 1/2 inches; 404 pages; twenty-five half-tone illustrations. Price, \$4, net.

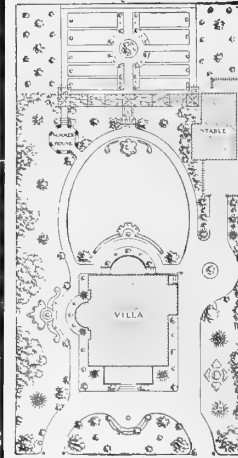
Notes on gardening month by month, written by an English amateur of considerable skill. Books of this type are not to be recommended to the American beginner, but they have a suggestive value to owners of country places who take a personal interest in every detail of fruit, vegetable, flower and greenhouse gardening.

The Country Home. By E. P. Powell. McClure, Phillips & Co., 1904. 5 3/8 x 8 inches. 383 pages; about two dozen full-page photographic illustrations. Price, \$1.50, net.

A singular combination of philosophy, sentiment, and practical directions—not a very good blend. A suggestive book for anyone who wants to live "on" the farm, not "off" it. It has seventeen chapters devoted to selecting a home, house-building, water supply, lawns and shrubberies, wind-breaks and hedges, fruit trees, berries, grapes, flowers, vegetable gardening, insects, animals, etc. Too many subjects are treated and therefore most of them are not developed sufficiently to be of real help to the beginner, e. g., the author recommends too many kinds of plants for wind-breaks and hedges without telling the good and bad points of the different kinds. The lack of an index is a grave fault in a book that aims to be primarily practical. Many of the scientific names of plants and horticultural varieties are misspelled, (e. g. *Stuartia pentagynia* (sic), *Rosa Wichuriana*, Louis Van Houte, Paul Neron, Antoine Revoire, Krumquat orange, *Gladiolus Sandersonii*), and there is no good authority for not capitalizing a generic name when used in combination with the specific, e. g. *prunus triloba*. The pictures are only decorative; they do not illustrate specific practical points, nor are they always sufficiently beautiful to be inspiring. The present volume is the first of a series called "The Country Home Library" on the title-page and "The Country Home Series" on the cover. The author is evidently a man of much experience in country living and many of his suggestions are original and worth trying, e. g. planting tulips in the strawberry bed where neither interferes with the other and both can be removed every three years. The author says it is an excellent way to have tulips by the armful and that the bulbs will multiply rapidly in such a place.

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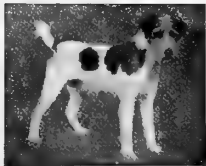
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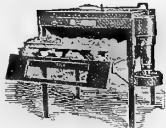
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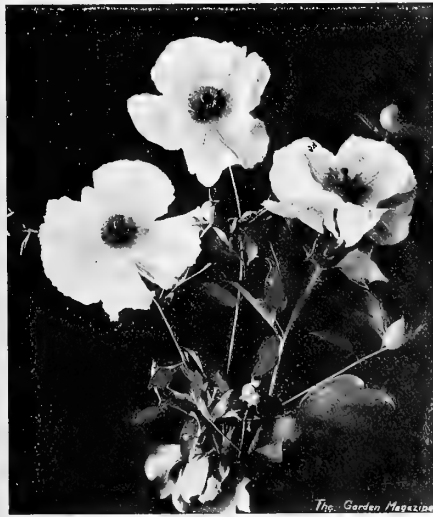
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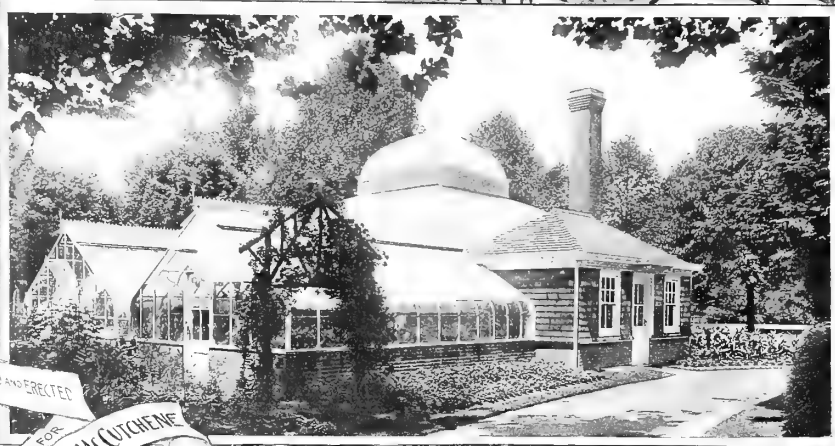
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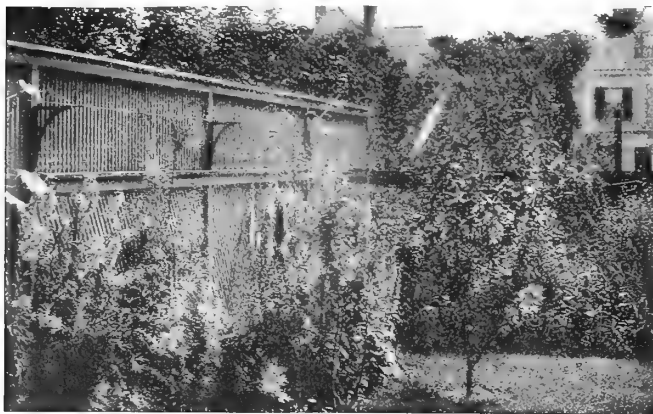
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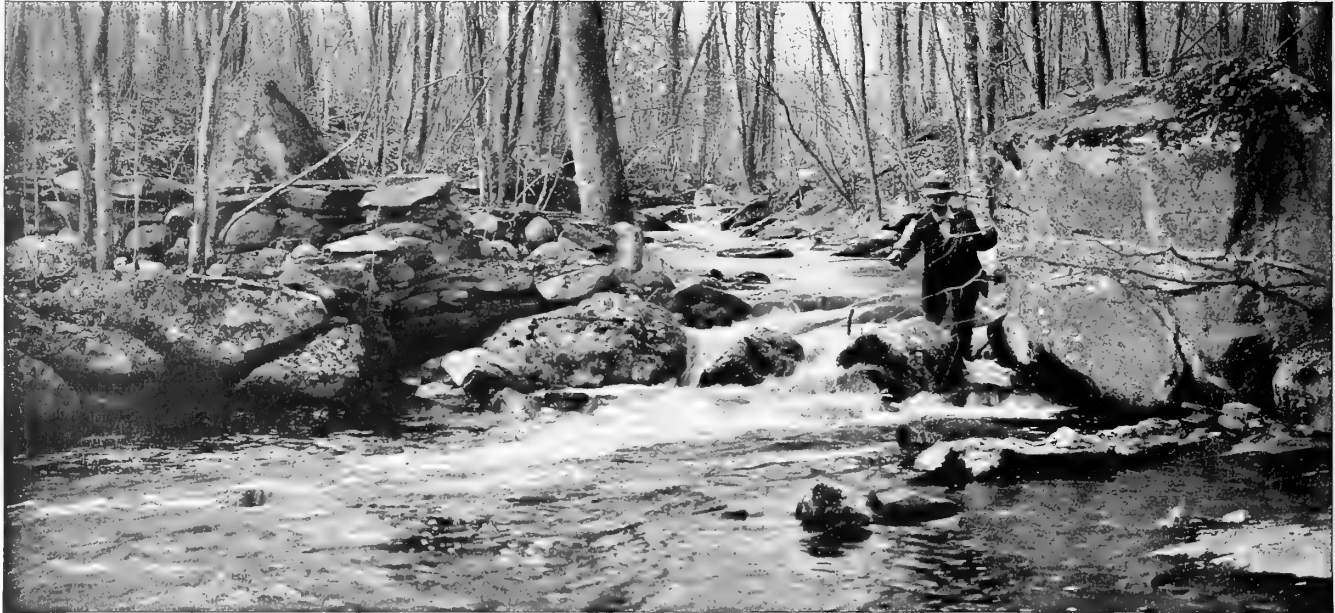
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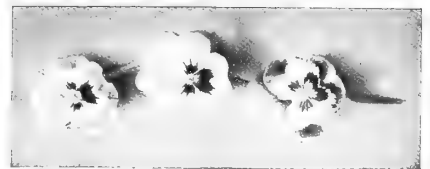
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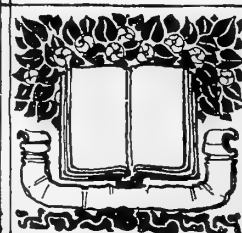
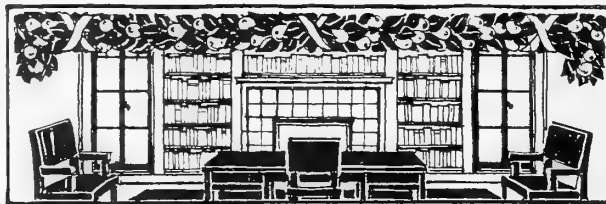
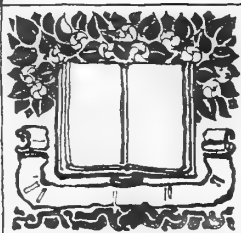
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[For the purpose of reckoning dates, New York city is generally taken as a standard. Allow six days' difference for every hundred miles of latitude.]

When Everything Needs to Be Done at Once

IF frost threatens, cover tender vegetables and flowers with empty dry goods boxes, peach baskets, bits of cloth, old carpets or even newspapers. Rake the litter back upon the strawberry patch if the plants are in blossom. Spray plants with cold water from the hose at dusk. Put board screens or miniature fences on the north and east sides of newly transplanted vegetables. Early next morning see if anything important is touched by frost. If so, cover it from the sun and let it thaw out as slowly as possible.

BEFORE DANGER OF FROST IS PAST

Sow seeds of tender vegetables if soil is warm and mellow. The important ones are beans, corn, cucumbers, eggplants, melons,

okra, pepper, pumpkin, squash, sweet potato and tomato. None of these young plants can stand even a light frost.

Plan and plant veranda boxes. First thinning and transplanting of vegetables and flowers. Write your labels at night and mark on the labels the distance apart plants should stand when thinned or transplanted.

Buy the bedding plants you want from your local florist—pansies, scarlet sage, verbenas, petunias. Better omit the coleus.

AFTER THE DANGER OF FROST IS PAST

Transplant tender vegetables and flowers from hotbed to garden.

Set out bedding plants, if you must have them. But think twice. Don't you really want something less gaudy and more permanent, e. g., hardy perennials?

Finish second thinning of everything in the garden. Transplant celery the second time. Why not can some asparagus?

BIG THINGS TO WATCH FOR

Jack Frost. First signs of cabbage and cauliflower insects; also currant worms.

The moment when the petals fall in the orchard. Then you want to spray.

DELIGHTFUL JOBS

Divide perennials and share the increase with your neighbors.

Start a wild garden, but don't take things without asking permission and don't dig up rare wildflowers and orchids.

Send a few seeds to some one at your vacation home, even if it is in the far north. Fresh camp-grown lettuce, radishes and young onions can be had in the wilderness.

Make bird houses for friends of the garden.

Get a toad. He is the best insect killer of them all. A toad is worth twenty dollars to a garden. (See Government bulletin.)

MEAN, NASTY JOBS

Spray fruit trees and berry bushes with a combination of Paris green, or some other arsenical compound, and Bordeaux mixture. See March number of this magazine, page 71

About May 20th put whale-oil soap on rose bushes.

The last week of May give liquid manure to roses. (See April, page 127).

Dust cabbage leaves at nightfall with pyrethrum powder. (See March, page 69.)

Spray cabbage, cauliflower and Brussels sprouts with the resin-lime mixture (pages 69, 71, March) twice before worms appear.

PLAIN HARD WORK

Who is going to do these things anyhow? Will you hire extra labor and get ahead of the game for once?

Make paths and borders neat.

Provide poles for beans.

Keep ahead of weeds.

Dig dandelions out of the lawn. (You can boil them for greens.)

Make veranda boxes.

Cultivate strawberries for the last time and mulch them just before they bloom.

The Calendar of a Back-Yard Garden—By H. C. Schaub

Decatur,
Illinois

A FORTY BY FORTY-FIVE-FOOT GARDEN OF VEGETABLES AND FLOWERS WHICH PRODUCED VEGETABLES WORTH TWENTY-FOUR DOLLARS—A SUGGESTIVE CALENDAR OF OPERATIONS

Photographs by BRUGH WERNER



194. April 3d. Sweet peas and a few early vegetables already planted. Risk a few anyhow!



195. May 8th. Nearly all the garden planted. First vegetables up. Tulips past. Rhubarb edible



196. June 5th. Many vegetables ready to use. Sweet peas in bloom. Tomatoes set out



197. July 3d. All the ground well covered except foreground where tea roses yielded well

ONE sunny afternoon in February the first garden work was done. The whole afternoon was spent with catalogues and the record book of the year before. By night two short seed lists were done, and a list of plants started.

In a garden as small as this it does not pay to raise corn, peas (except the earliest), cucumbers, squashes, potatoes and a few other things that take up too much ground.

I always plant flowers that bloom for the longest period, e. g.: Zinnias (always Dwarf Fireball), because they make a gorgeous show of red from June till frost and stand our dry summer weather.

March 6th the first planting was done. Ponderosa and Freedom tomato seeds were sown in a box filled with earth saved in the cellar. A week later, rhubarb, hollyhocks, and tulips showed signs of life outdoors.

March 19th I planted sweet peas.

March 25th the tomatoes were up.

April 3rd we started a box of zinnia seeds.

April 5th the first outdoor planting of radishes, beets, lettuce, mustard and onion sets was made. Two dozen tomato plants were transplanted to another box, standing about two inches apart each way.

April 9th we used the first rhubarb from the garden. The year before the first rhubarb was pulled on March 31st.

April 13th Nott's Excelsior garden peas were planted. Early Alaska is the best in this section for early planting. More onions were now set out.

I firmly resolved that next fall the whole garden should be spaded over. Last fall, being busy, I did not get it all dug. The part not dug was now a week behind.

The second week of April asters were planted in boxes and hollyhocks were transplanted to a row along the south side of the woodshed to hide the building as much as possible. The hollyhocks sow themselves. A few in odd corners are allowed to grow the first blossomless summer. Next spring I transplant them to permanent quarters.

The third week in April things began to grow encouragingly. Beans were planted—the Stringless Green Pod variety.



199. Earliest of all sweet peas in bloom May 23d! Vines then fifteen inches high



200. Hollyhocks and sweet peas at their best. Sow sweet peas in March or September



201. Popcorn, young celery and assistant gardener. All three were flourishing on August 7th



198. August 7th. The garden at its best. Tomatoes made a solid screen eight feet high



202. Celery October 1st. Half banked, twenty inches high, half boarded. Used until after Christmas



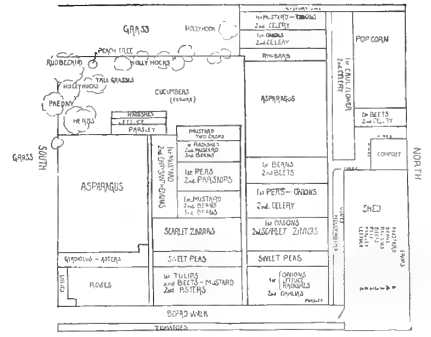
203. Chrysanthemums October 25th, after several hard frosts. Flowers an inch and one-half across

the plants make roots for next year. Parsnips were now put out.

July was easy. Not much to do but hoe. Beets swelled fast. Onions got big and round and lay basking in the sun. The dwarf scarlet zinnias absorbed so much sunshine in daytime that they themselves shone late into the dusk. Sweet peas bore prodigiously. Besides hoeing after every shower there were in July stakes to set and plants to tie up. Dahlias, gladioli, tomatoes, chrysanthemums, even hollyhocks, had to be staked and tied. As fast as one crop got off the ground another was put in. Asters began to make a great showing. July 18th tomatoes were ripe—two weeks late. On the 23rd the last of the onions, about a bushel and a half, were dug. Tomatoes now began to bear well.

August too was easy. Asters still made a show. We had the best dahlias in town. I estimate that we got \$4 worth of Caroline Testout roses. The last of August beans and lettuce were planted for the last time.

September was August over again. The garden still made a great show but the work had been done. Celery was watered. September 23rd the first of it was banked up.



204. The author does not claim that this is the best possible garden plan or even a typical one, but every foot was used and several crops grown on the same ground. Size of garden, 40 x 45 feet.

In October the last of it was banked and boarded up to blanch.

The first two weeks in October we had a good show of dahlias and pompon chrysanthemums. In vegetables we had green beans, beets, mustard, tomatoes, parsnips, lettuce, parsley, and were beginning to use the celery. This last was one of the great successes of the year.

The last week in April the weather was nearly warm. Nasturtiums were planted against the wire fence next the street. A dozen cauliflower plants were bought for ten cents and set out.

Asparagus, eagerly watched for, now got above ground. New plants (Palmetto, three years old) were put out two years ago.

April 23rd tulips began to bloom. April 26th the first asparagus was used. More peas planted. Gladiolus bulbs put out. April 30th the tulips were at their best.

The first week in May more beans were planted. Some of the zinnias in the seed box were set out. Asters were transplanted two inches apart in another box.

May 9th the third crop of mustard was put out. Used as greens instead of spinach we find mustard more palatable because of its pungent taste.

The 12th of May the plants came. This is always nearly as big a day in making the garden as the day sweet peas are planted.

Next week the tomato plants were set out.

May 23rd was another big day. The first sweet peas bloomed, the first in town. A small square of golden yellow popcorn was planted for the boy's amusement. Before the 31st tomatoes and roses were in bloom.

In June flowers began to bloom on every hand. All the plants started in the house were put out. Tulips were not dry enough to dig until the middle of the month. They were succeeded by asters in four varieties. June 8th a hundred celery plants, bought of a gardener for forty cents, were put out between rows of cauliflower, mustard and peas. They were four inches high. In less than a month mustard and cauliflower were out, leaving the ground to the celery. In June we got all the cauliflower, beans, radishes, young onions, lettuce, mustard, rhubarb and asparagus June 15th, to let



205. Nearly two pounds each! Several of these Ponderosa tomatoes weighed thirty ounces each. The vines were trained to single stems, which seems to make earlier and larger fruit probably because the foliage is more open to the sun and there is no temptation for the plant to run to vine.

The Experience of a Vine-Clad City—By Daniel V. Casey

THE "MOST BEAUTIFUL STREET IN THE WORLD"—THE VINES THAT MAKE IT SO
—THE KINDS THAT HAVE STOOD THE TEST OF TIME AND HOW TO GROW THEM

Photographs by the National Cash Register Company



ONE of the leading landscape architects of America has declared that, considering the cost of its homes, K street, Dayton, is the most beautiful street in the world. The chief reason why it is so is that every house is covered with vines. Vines have been planted on a larger scale in Dayton than in any other city of its size in America. Dozens of different species have been tried and the list of best kinds for public use in civic improvement work has been narrowed to a small number which will be found of the utmost practical value to beginners, especially those who have little to spend. Good permanent vines cost anywhere from twenty-five cents to a dollar and a half depending chiefly on the ease of propagation and the age and height of the plant.

Dayton's experience emphasizes the need of trellises wherever vines are to be trained over wooden walls. The simplest, cheapest and least obtrusive trellis is of woven-wire fencing fastened to the wall on horizontal strips of poplar or pine two inches square. These strips keep the vines away from the weatherboarding, preventing dampness and consequent decay. When walls are to be painted the entire trellis, vines and all, may be taken down without injury. Over such trellis, which may be had in the width desired at every hardware store, any of the hardy climbers can be trained without difficulty. Boston ivy may be used on frame houses in this fashion without damage to the walls.

Temporary vines are annuals which should be planted in the same bed with permanent vines while the woody species are getting their growth. Annuals give results the same year in which they are planted. They are of two kinds—those which are grown chiefly for their flowers, and those which are grown to cover unsightly objects as quickly as possible. Morning glories fulfil both duties. Sweet peas are useful only for flowers, and have no value for screening anything obtrusive, because they are not high enough and because they generally become unsightly themselves. The wild cucumber vine is one of the best fast growing annuals for covering such places, although its flowers are not showy, and it sometimes becomes a nuisance. It makes great quantities of big seeds that germinate quickly and I have seen several gardens overrun with wild cucumber vine, which actually became a weed. No reader of this magazine ought to plant wild cucumber on his porch. It is good enough to cover a rubbish heap, but there are better things for a good veranda.

There is no question as to which are the two best tall-growing hardy vines for foliage

effects. They are ampelopsis and Virginia creeper, the former being the best for brick and stone and the latter for wood. Ampelopsis requires no support because its beautiful little tendrils which look like baby hands fasten on to every surface with a grip that cannot be shaken. Virginia creeper requires a support and is more wayward in its growth, so that it often leaves large gaps of wall uncovered. Ampelopsis makes a flat surface and its leaves are dark green and glossy; a wall covered with Virginia creeper has a looser and rougher texture. Both have brilliant autumn colors and are rich in shades of red. Ampelopsis has practically no insects. Virginia creeper is much troubled in some parts of the country by caterpillars.

If, as some say, ninety-nine out of a hundred American buildings are commonplace or ugly, it is a good thing to cover the walls completely, but when we have a piece of architecture that is a joy to everybody—something in which we can really take

pride—ampelopsis should never be allowed to cover it entirely. In such a case the beauty of the vine is its aspiration—its incompleteness. This is particularly true of a beautiful church, and the right relation of architecture and foliage is well understood in England, but not in this country except in Boston and a few other communities.

Of the tall flowering vines, wistaria is undoubtedly the best, and the common purplish flowered kind (*Wistaria Chinensis*) is justly the favorite. Its long grape-like clusters of pea-shaped flowers are much richer and stronger than the pure white variety; and the long strings of the Japanese species have never made a great impression in America, presumably because we like mass effects, whereas the Japanese like these loose and airy clusters, and care more for lines than they do for color. The wistaria must be headed back and pruned with care if you are planning to cover a wall with it completely, and if you want a big show of



206. The Virginia creeper (*Ampelopsis quinquefolia*) must have a support. Narrow strips of chicken wire can be used for a building like this, which is mostly glass. Every factory should be covered with vines

flowers. Magnificent effects have been produced by such treatment in England, but they are unknown in America. Our way of growing the wistaria is to send it up the porch pillars, and let it string along the piazza roof, from which the clusters depend.

The showiest of all permanent vines for porch decoration are the hybrid varieties of clematis, of which *Clematis Jackmani* is the favorite purple variety, and *Clematis Henryi* the best white. These rarely climb more than fifteen feet, and for this reason they are suitable only for porches, canopied window boxes and trellises. Of the small-flowered species of clematis the best known is the Japanese *Clematis paniculata*. This is a mass of snowy bloom from July until September. The flowers have four petals, and are about an inch or an inch and a half across. These are succeeded by fluffy masses of "seeds." This species is not quite as hardy in some localities as our native *Clematis Virginiana*, commonly called "old man's beard," from the beauty of its feathery seeds. The flowers of this species are smaller and less abundant than those of *Clematis paniculata*, but, of course, one can often get it from the woods for nothing.

Three other hardy climbers have also won great favor in Dayton. The trumpet creeper (*Tecoma radicans*), with its showy trumpet blossoms of orange and scarlet, and its vigorous stems and leaves, has been used with admirable effect on many two-storied houses, notably on one fine old farm-house with a wide veranda and an upper balcony. Wild grape (*Vitis riparia*), planted in some cases to tide over the waiting time for Boston ivy, has been retained for the grace of its stems and leaves and the exquisite fragrance of its flowers. Dutchman's pipe (*Aristolochia Siphon*), which takes its name from its curious blossom, rivals the trumpet creeper in bold beauty and ability to make its own way when rooted in rich soil, but the flower has a disagreeable odor.

For winter effects, nothing equals bitter-sweet (*Celastrus scandens*). Its scarlet berries resist frost and wind until late in January. Its leaves are long and pointed and the vine is a pleasant piazza guest in summer as well



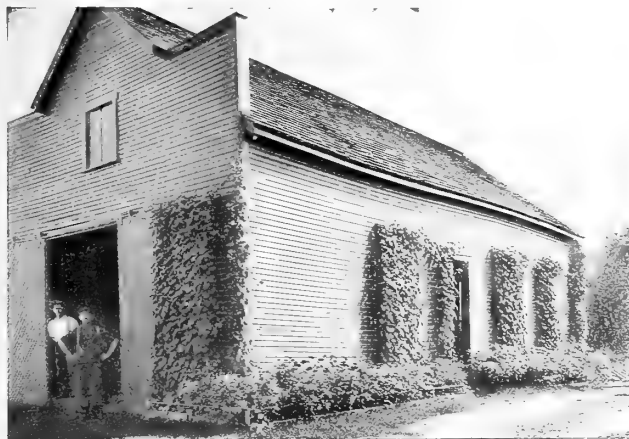
208. The chief reason why this street is the most beautiful in the world (considering the cost of the homes) is that every house is covered with vines. Dayton knows more about the best kind of vines than any other city

as the bravest and cheeriest of its tribe when the snows come. The matrimony vine (*Lycium Chinense*), though its growth limits it to low verandas and fences, keeps the bitter-sweet company with crimson berries until well into December. It is a persistent bloomer, the flowers of pale rose and buff blossoming from June until September.

Both Hall's honeysuckle (*Lonicera Halleana*) and the common Japanese honeysuckle (*Lonicera Japonica*) have been more generally planted than any other hardy vine, not even excepting the favorite Boston ivy. Hall's honeysuckle climbs to twenty feet the second year and can be used on trellises for covering blank walls, on porch columns, on fences and arbors and for gaps in hedges. Its leaves are evergreen. Its scented blossoms, creamy white at the opening and buff

gold after a week of sun, appear in June and persist until late in October. This is probably the best flowering vine for the amateur.

Nearly all woody vines require two season's growth in their permanent quarters before they amount to anything. Meanwhile annuals are the thing. Dayton's favorites are morning glories and moonflowers. Morning glories are easier to raise and more popular because they bloom in the daytime. Moonflowers open only at night and they are not as popular as they deserve because people do not understand that they should be grown in masses. One moonflower is no good, but a great cloud of mystical white flowers shimmering in the moonlight makes an impression. Cypress vine and *Cabra scandens* are also much planted in Dayton.



207. Plant annual vines for flowers the first year, while the permanent woody vines are growing. Morning glories are the most popular temporary vines. See how they have improved the appearance of this hopelessly ugly building!



209. Ampelopsis is the best tall, permanent, self-supporting vine. It is better for brick and stone buildings than for frame houses, as it may eventually cause the wood to decay. Once planted, needs no attention

Thinning and Transplanting Vegetables—By E. L. Fullerton Long Island

WHICH KINDS TO LEAVE AND WHICH TO MOVE—HOW FAR APART THEY SHOULD STAND
—HOME-MADE AND OTHER INEXPENSIVE DEVICES FOR TRANSPLANTING VEGETABLES

Photographs by H. B. FULLERTON

IT HAS been said that more good vegetables have been ruined for want of being thinned at the proper time than by any other cause. However, that may be, one of the most puzzling things for the beginner is to find out whether any particular vegetables

in flowers the evils of overcrowding are not so apparent. We usually get a sufficient wealth of bloom from the given area, although fewer plants would give better flowers.

Seeds are sown very thickly with the idea of having plenty of young plants so as to provide against accidents or loss from insects. The thinnings of the following crops can be used in the kitchen: Celery, lettuce, carrots, beets, and spinach. The home gardener, therefore, had better do the thinning of such crops by degrees, not at one time, as is the rule with the gardener for market.

Thin out as necessity arises, but don't hesitate to pull up and destroy the young plants before the row gets too crowded and the plants become spindling. When too many vegetables of one kind are allowed to grow in the same row the great majority of them are simply weeds. True it is that "The worst weed in corn is corn."

THIN VEGETABLES TWICE

Seedlings that are allowed to remain where sown, need to be thinned as carefully as possible, the first time when they are about two inches high, in some cases even sooner. The stockiest plants should be allowed to remain, after thinning them to about one-half the distance the plants are to stand from one another. When these

plantlets have a still sturdier growth, they may be finally thinned to the distance apart at which they are to remain. Firming the soil each time in order that the roots of those that remain may not be left loose.

TRANSPLANTING

As a rule, transplanting, which is moving from the seed bed to the garden, results in injury to the plants. Celery, however, makes a strong tap root which is broken in transplanting, inducing a bunch of fibrous roots which is easy to transplant the second time. One result of transplanting is that the plants are set at a proper distance, and have room to develop to their very best.

TRANSPLANT ON A DULL DAY

Transplant on a dull day by preference or at dusk, and be careful not to let the roots of the young plants dry out. If they are taken up from a seedbed or coldframe throw a little loose soil over the roots as they lie in the box or basket ready to be carried to the garden—and keep them covered until they are put into their new quarters.

For taking the young plants up from the seed-bed, a small hand fork is useful to loosen the soil. To set in the garden mark a straight line with a hoe, rake or a stick using the garden line as a guide. It is very important to have the rows parallel and



210. Seedlings are grown in a bed made thoroughly fine by digging and raking. It should be in the warmest part of the garden

should be thinned or transplanted and how far apart the plants should stand afterward. He will get some help from the catalogues as to distances, but whether he should transplant or thin is the kind of thing that is not in the books.

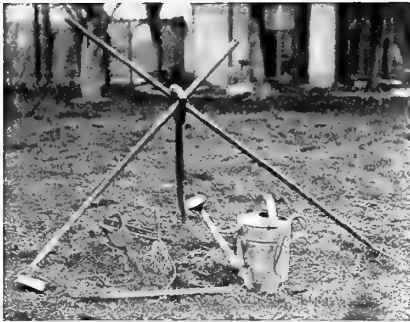
There is a still greater difficulty. Even when a person knows how far apart the plants should stand, or has good authority, it requires a good deal of nerve to pull up and destroy the unnecessary seedlings—more nerve than the average amateur possesses. While it is possible to save some of the thinnings by eating them or transplanting them, most of them are simply in the way. They say that a person never becomes a good gardener until he steels his nerves to this ruthless sacrifice. A vegetable must have plenty of room to develop its best size and flavor. One can take no pride in small or commonplace things. It is the quickly grown, finely flavored vegetables that are worth working for and it is better to err on the side of giving each plant too much space rather than too little. For example, the seedsman says that endives must be thinned to eight inches. I gave mine only six inches, for it did not seem possible that those delicate seedlings could develop such magnificent heads of salad leaves. Mine were good, but I soon realized that they would have been better had I given them their allotted space. I would have had several heads less, but one would have served the purpose of two.

"THE WORST WEED IN CORN IS CORN"

It is far more important to thin vegetables than to thin flowers. In the former we want each plant to develop to its fullest, whereas



211. Old tin cans make good pots for starting seedlings in a hotbed. The plants are set out without any check to the roots. The solder is melted off and the can tied with string till planting time comes



212. Labor is saved in the long run by transplanting into straight rows and watering well



213. Thin ordinarily when the first true leaves develop, transplant at the next pair



214. Make a light furrow, using the line as a guide. Measure off distances when planting

straight and it is economical of labor to have them regularly spaced so that the wheel hoe can be used up and down a large number without resetting the wheels.

TAKE ALL THE ROOTS

Digging those plants which have a well developed root at this time must be done carefully. Get all the roots. If the soil in its bed is very dry it must be watered so that the roots will not be broken in separating the young plants. If possible transplanting should be done in the late afternoon, so that the little plants will be able to take a hold in their new quarters before they are attacked by the heat of the day. The amateur can help them greatly by shading for a few days, by boards put edgewise along the sunny side of the row. Cabbage and tomato plants can be protected with paper cylinders made from old newspapers. Plants from pots are "knocked out" where they are planted and so suffer little check. The pot can be inverted over the young plant if the work is done on an unusually hot day, although it is not often necessary to shade pot grown plants. In the case of transplanting cabbage, leek, celery, cauliflower, etc., the same result is attained by reducing the top. About one third is twisted or cut off.

FIRM THE SOIL

Make the soil firm about thinned or transplanted seedlings. They should be made so firm, and the earth so closely packed, that the plants will not yield to a pretty firm pull. The drier the soil the harder and tighter it must be packed. Very wet soil must not be packed. Wait until it dries out and then go over the ground again.

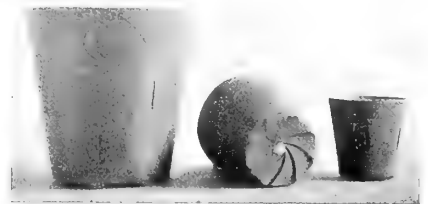
Small plants are set in sufficiently well by firming the soil with the fingers, or the dibbler which is used for making the holes. Larger plants are best firming by pressing with the ball of the foot. After watering, hoe at once, drawing a little fine dry earth about the plant to serve as a mulch.

FIBROUS ROOTS BETTER THAN TAP ROOTS FOR TRANSPLANTING

In transplanting the vital point is to have a good root growth. If a plant has a fine



215. Reduce the top of young cabbage and celery plants one-third to prevent too much evaporation. Twist off or cut the tops of the larger leaves. Keep roots covered at all times



216. Paper pots for transplanting seedlings come in various sizes. Provision is made for drainage. They are light, do not break and are inexpensive. Plants raised thus are shifted without any shock



217. Grow tender seedlings to a good size in pots and put out after danger of frost is past. Nothing gained by planting before



218. The paper pot comes apart as easily as the old-fashioned tomato can, and it does not need baking before use to melt the solder. Far superior

underground system, the above-ground, or leaf system, is nearly sure to be all right. If the roots are spread about, one plant tangled with another, they are certain to be broken when lifted to be separated and set elsewhere. If, however, they have been confined to a reasonably limited space, one plant separated from another, they are compact, and can be transported with a minimum check to their growth. If a plant's roots have been torn and mangled, they have to heal, and the plant must make new roots and become firm before any growth can take place above ground. On the other hand, if the roots have been confined to a small space, say that enclosed by flower pot or a strawberry box, they can be set into the ground, where they will immediately expand without shock to their system, and the growth above ground will continue unchecked.

[On page 196 of the May GARDEN MAGAZINE will be found an account of home-made transplanting devices.]

THIN THESE

The figures show size the seedlings should be when handled and the maximum distances apart they should be after thinning.

Greens

Asparagus—3 inches high, 24 x 36.
 Chard—3 inches high, 12 x 18.
 New Zealand Spinach—2 in. high, 12 x 24
 Orach—6 inches high, 24 x 26.
 Purslane—2 inches high, 4 x 12.
 Spinach—1 inch high, 6 x 18.

Roots

Beets—4 inches high, 9 x 18.
 Carrot—3 inches high, 6 x 18.
 Parsnip—3 inches high, 6 x 18.
 Rampion—2 inches high, 3 x 8.
 Salsify—3 inches high, 4 x 18.
 Scolymus—4 inches high, 6 x 18.
 Scorzonera—3 inches high, 6 x 18.
 Radish—2 inches high, 3 x 8.
 Turnip—3 inches high, 4 x 18.

Salads

Chicory—4 inches high, 6 x 12.
 Corn-salad—2 inches high, 6 x 6.
 Cress—3 inches high, 3 x 6.
 Dandelion—(2 weeks old), 6 x 6.
 Endive—2 inches high, 12 x 12.
 Lettuce—3 inches high, 8 x 12.

Seeds and Fruits

Beans (all sorts)—3 inches high, 12 x 24.
 Corn—6 inches high, 12 x 36.
 Cucumber—2 inches high, 36 x 36.
 Martynia—4 inches high, 36 x 36.
 Muskmelon—4 inches high, 60 x 60.
 Okra—5 inches high, 18 x 24.
 Pumpkin—4 inches high, 108 x 108.
 Squash—4 inches high, 72 x 96.
 Tomato—3 inches high, 36 x 48.

Sweet Herbs

Borage—2 inches in diameter, 10 x 10.
 Catnip—6 inches high, 24 x 20.
 Chervil—2 inches high, 4 x 12.
 Fennel—4 inches high, 8 x 18.
 Lavender—4 inches high, 12 x 24.
 Marjoram, Sweet—4 inches high, 12 x 12.
 Basil, Sweet—4 inches high, 8 x 8.
 Parsley—2 inches high, 6 x 12.

Miscellaneous

Kohlrabi—4 inches high, 9 x 18.
 Leek—4 inches high, 5 x 12.
 Onion—2 inches high, 12 x 20.

TRANSPLANT THESE

The figures show size the seedlings should be when transplanted and the maximum distances apart to set them in the garden:

Greens

Beet—4 inches high, 9 x 18.
 Brussels Sprouts—6 inches high, 12 x 18.
 Cabbage—6 inches high, 24 x 36.
 Celery—2 inches high, 3 x 48.
 Kale—5 inches high, 12 x 18.
 Pak-choi—3 inches high, 12 x 12.
 Pe-tsai—3 inches high, 12 x 120.

Roots

Beet—4 inches high, 9 x 18.
 Sweet Potato (when frost is past)—18 x 24.

Salads

Cardoon—5 inches high, 24 x 36.
 Celery (first)—2 inches high, 3 x 48; (second)—6 inches high, 6 x 48.
 Chicory—4 inches high, 6 x 12.
 Endive—2 inches in diameter, 12 x 12.
 Lettuce—4 inches high, 8 x 18.

Sweet Herbs

Borage—2 inches in diameter, 10 x 10.
 Fennel—4 inches high, 8 x 18.

Seed Fruits

Bean, Lima—5 inches high, 36 x 36.
 Eggplant—3 inches high, 36 x 36.
 Martynia—4 inches high, 36 x 36.
 Pepper—6 inches high, 18 x 24.
 Tomato—6 inches high, 36 x 48.

Miscellaneous

Artichoke, Globe—6 inches high, 24 x 36.
 Leek—8 inches high, 5 x 12.



219. Lift the seedlings from the seed-bed, carrying them in a box, the roots covered with a little soil to keep from drying. The careful gardener sets them in straight rows, using the garden line as a guide, makes the hole with dibble or trowel, inserts the young plant, firms the soil and waters. Cultivate later

Asparagus for the Home Garden—By Francis Hope ^{New York}

HOW TO CROP FOR TWENTY YEARS—STARTING BEDS FROM SEEDS OR ROOTS—A PROFITABLE VEGETABLE FOR THE AMATEUR ON ANY ORDINARY GARDEN SOIL

ASPARAGUS is one of the best vegetables for the amateur's home garden. It is perfectly hardy, never fails to produce a crop, is one of the very first vegetables ready for spring and yields through June. It grows on any ordinary garden soil, but is surprisingly

forced, by lifting the roots carefully in the fall and placing them in a hotbed, or greenhouse. The roots should be covered, first lightly, then more heavily, until a depth of four to six inches has been obtained, using for this covering either well-rotted manure, or old tan bark.

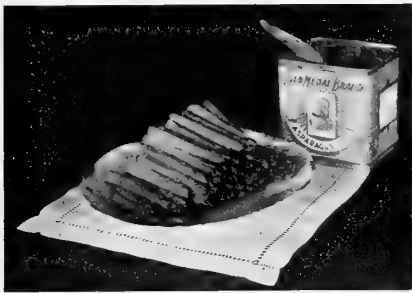
Spring is by far the best time to make a new bed from roots. Do it any time from now till the end of June. They should be set in rows, the top of the stalks, or buds upon the roots, six inches below the surrounding level. It is wise to dig trenches

After this period is reached, start over again, and the following year cut comparatively lightly, progressing in like proportion each succeeding year. This gives the roots a chance to recuperate. If you have two small beds, cut heavily in alternate years.

After you have ceased cutting, work over the ground a little and give the plants some food, for it is from this time and throughout the rest of the summer that the roots are storing strength for the coming season's crop. Liquid manure or nitrate of soda, one ounce in three gallons of water, is particularly beneficial during the cutting as well as during the growing season, and most satisfactory returns are certain.

Asparagus enemies are rust, root-rot and beetles. Rust comes on this plant as it does on beans. Brown specks appear and the leaf shrivels up and turns yellow. If rust appears, a fact you will soon remark, cut off all affected branches close to the ground and burn them at once. Early in the autumn do not fail to burn all the branches, so that the disease may not spread. Spraying with Bordeaux mixture and Paris green after cutting has ceased for the season may help somewhat and certainly cannot do any harm.

There are two beetles that feed upon this plant. One is known as the asparagus beetle, the other as the twelve-spotted beetle. They both feed on this plant alone.



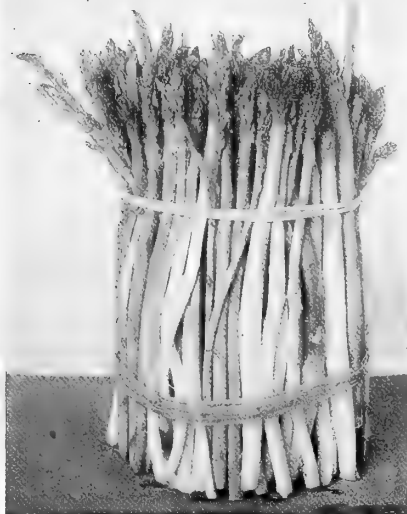
220. A winter luxury—canned asparagus tips. The butts are awkward to cut on toast or in salads, but are less objectionable in soups. Canned asparagus may be had from any good grocery but there are thousands who have never heard of it. May be canned at home

improved by high cultivation and heavy dressings of rich manure. The crop is earliest on sandy loam. It is not suited to land which is very wet.

There are two methods of starting a bed of asparagus, either from seed or from roots one or two years old. A good one-year-old root is very little different in appearance from a poor two-year-old one, but very different in productiveness, so don't look for bargain sales when buying.

If you use the former method start with good seed, make the bed of the desired dimensions, fork it quite deep, work in a plentiful amount of fine, well-rotted manure, be sure the earth is made fine and friable, and, above all, see to it that it is well drained. Then sow the seed in rows fifteen inches apart, and bury them one inch and a half deep. Do not sow too thickly, for the plants must not stand, after thinning, closer together than three inches. It is a seed of slow germination, so it is well to plant radish seed in the same row—they will mark the row so that weeding can be done, break the surface of the soil to prevent baking, and give you a crop of radishes as a sort of extra dividend. Take good care of the young plants, keeping them free of weeds and the soil loose and mellow. In the fall, when the feathery leaves have turned yellow brown, cut the stalks off at the ground, dig up the bed to a depth of three inches, whiten the ground with salt, and put over the entire surface four to six inches of fresh, loose, stable refuse, filled with straw.

The following spring rake off the coarsest of this manure and dig the balance under. The young shoots appear early and if you have never seen them before, you will have to look closely for them. Asparagus may be



221. How to buy asparagus. Many slender green pieces are better than the few thick white ones. They do not look as pretty, but they taste better. Green Palmetto asparagus from the home garden is cut nearly level with the bed after the head has grown six inches above

for the roots, and to put in drainage, if the natural drainage is not good, then some well-rotted manure, a little bone-meal or complete fertilizer, and a layer of well-powdered loam. Mix all thoroughly, set the roots on this foundation, and fill the trench.

The cultivation of the roots is exactly the same as for seed-grown plants, only you do not need to sow radish seed, as the shoots are all ready to push up out of the ground.

The three best-known and more generally cultivated varieties for table use are Conover's Colossal, Moore's and Palmetto. The first produces large, white stalks, the last smaller, green stalks. We prefer the Palmetto. It is best not to cut any heads the first year. The second year cut lightly. In the next, or second cutting season, cut every day up to June, allowing none to run up into stalk. The following year lengthen the cutting season, so that the harvest time may be a little longer, and increase each year until the season extends to eight weeks.



222. What the millions buy and the connoisseurs scorn—thick white asparagus. Blanched asparagus has less flavor than green. The big, white, showy stalks are gotten by cutting far below the surface with a special knife. Don't eat cordwood; eat home-grown asparagus. (Conover's Colossal, good—to sell)

A California Maze—By Charles S. Aiken

A TWENTY-YEAR-OLD LABYRINTH THAT CAUSES NO END OF MERRIMENT AND VEXATION TO YOUNG AND OLD

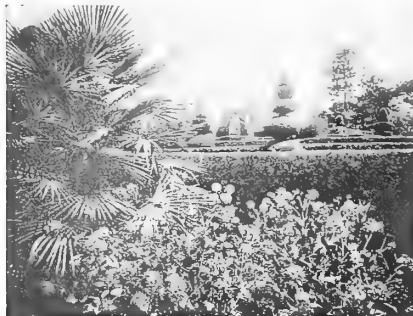
JUST why the labyrinth or maze has fallen into disrepute I do not know. Perhaps it is too costly to maintain on a private place in a country where estates are not entailed. Then, too, people who have spent half the night wandering about in a maze, seem to



223. Each successive wall becomes higher toward the centre. The inner ones are taller than a man

think it is "too much of a good joke." Americans do not like obstacles, except to overcome, and the average small boy loses patience before long and goes crashing through the evergreen walls on his way to liberty. Naturally, the bill for repairs is a considerable item. Anyhow, the landscape-gardeners of this country do not take the maze seriously. It used to be popular in the sixteenth and seventeenth centuries in the Old World, but there are only two notable mazes known to me in America. One of them is a new one made by Miss Cornelia Warren, at Waltham, Mass., which will be pictured before long in *Country Life in America*. The other is the famous old maze at the Hotel del Monte, California, which is here depicted.

This labyrinth was planted more than twenty years ago by Ulrich, an excellent gardener, who for many years directed the floriculture of Del Monte. The immense growth is entirely of Monterey cypress, which resembles the yew very strongly in habit and development. The design is similar to that of the maze at Hampton Court, near London, but that maze is composed entirely of yews. The wanderer in these footpaths may travel over a mile before finding his way to liberty. The tree-growth at present varies from six

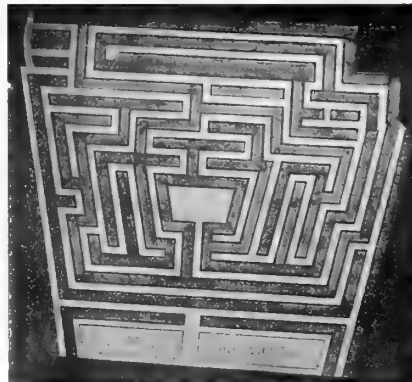


224. The Monterey cypress is trimmed into the shape of chessmen and other fantastic forms

to sixteen feet in height, with hedges many of them more than five feet thick. Around the top of hedge boundaries are designs of chess men, rooks, castles, knights, and pawns. These fantastic shapes have been preserved for several years by means of careful and constant trimming.

The maze with its borders of ever-blooming flowers is an attraction for old and young all the year round. During the summer months, especially when crowds of children are here for their vacation outing, the labyrinth paths are blocked with youngsters and the older folks, too. Globe-trotters, staid tourists, with their aggressive sight-seeing manners, and bridal couples from everywhere, lose themselves in this labyrinth. If you want to have a jolly time, eat a good hearty dinner, go down to the maze and watch the people inside who have missed their dinners.

The manager of one of the largest wholesale business houses of San Francisco walked venturously in the maze main entrance not long ago, and half an hour later his wild shouts for help were heard. He was lost,



225. Can you solve the maze? The white lines are the paths, the dark ones the hedges

and one of the watchmen assisted him with a step-ladder to climb from his evergreen prison. Another hotel guest, a young Scotchman whose ancestors fought at Flodden Field, endeavored to explore the maze by moonlight. It looked easy, and he walked and walked and walked, but he forgot to strew the walks with torn paper after the manner of the hare-and-hound sportsmen (not an uncommon method among the maze rovers); omitted, too, to adopt the tactics by which the Arabian Nights' hero traced his way easily to freedom, and the result was the rousing of the hotel in the early morning hours. The night watchman, a part of whose business it is to know the mazy by-paths, rescued the adventurous nobleman from his plight. It is not an uncommon sight to witness bewildered men and women scrambling wildly over the hedge, discouraged at their efforts either to find the goal or to retrace their steps.

It takes two men a month to trim these

boundary hedges, which rise sheer above the height of the average rover, each parallel line of hedge increasing in height as the centre of the maze is approached.

The accompanying illustrations show this evergreen labyrinth in winter and summer.



226. "Abandon hope all ye who enter here," unless you carry thread or bits of paper

The views taken at these seasons show little difference, only a few less blooms of surrounding flowers mark the pictures taken in the middle of winter.

The Monterey cypress is one of the most famous evergreens in the world. On Monterey Bay, not far from this maze, are the few remaining specimens of the little colony from which have been propagated the thousands of cypresses that one sees in California. In cultivation, the Monterey cypress (*Cupressus macrocarpa*) makes a symmetrical tree of great formal beauty. The original cypresses, the rugged veterans on the seashore, are as different from these as possible. Readers of *Country Life in America* may remember the spectacular pictures of these in the California number (January, 1902), together with these verses of Mrs. Anna Botsford Comstock:

Staunch derelicts adrift on Time's wide sea,
Undaunted exiles from an age pristine!
Your loneliness in tortured limb we see;

Your courage, in your crown of living green;
Your strength unyielding, in your grappling knee;

Your patience, in the calmness of your mien.

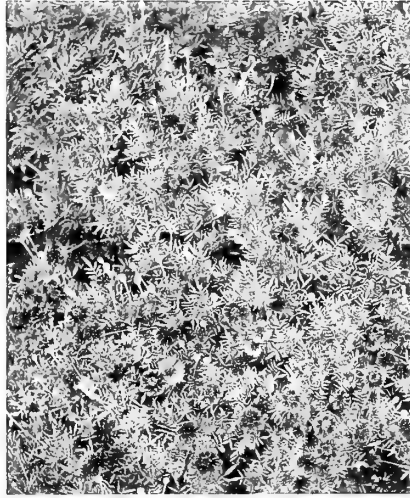
Enrapt, you stand in mighty reverie,
While centuries come and go unheard,
unseen.



227. A general view of the maze. It is surrounded by ever-blooming flower beds



228. Foxgloves will bloom next spring from seed sown this May. Cover with litter in winter



229. African marigolds photographed from above. They hide the ground and are covered with flowers



230. A square yard of soil from the swamp produced plants that hide faucet and water barrel



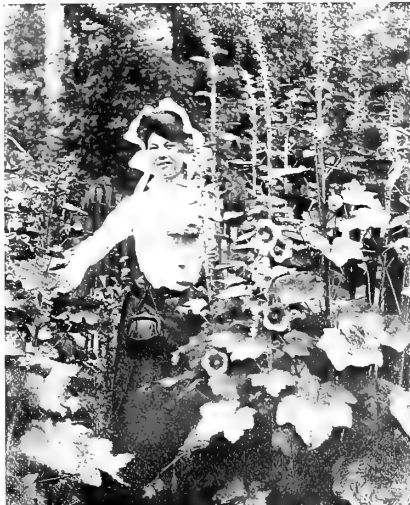
231. Eight weeks ago this poppy-bed was full of hyacinths; eight weeks later it will be full of verbenas. The hyacinths are permanent. Annuals are sown May 1st



232. This 40 x 45-foot garden cost \$50 to start; it requires \$10 a year to maintain; and needs an hour's care a day. It is on a lot 70 x 100 feet



233. An eight-foot hedge of hollyhocks is cut down in July, revealing a row of Golden Glow



234. The Golden Glow flowers in August and the hollyhocks spring up again



235. Aconite or monkshead, a blue autumn-blooming perennial with flowers that open in a singular way

A FLOWER GARDEN THAT COSTS TEN DOLLARS A YEAR—BY L. SOLLMAN, OHIO

Celery for the Home Garden—By Barry Loring ^{New York}

HOW TO GROW CRISP, SWEET, NUTTY CELERY FOR TABLE USE FROM AUGUST TO MARCH—WHY BEGINNERS ARE AFRAID TO TRY CELERY—NOT A DIFFICULT CROP TO GROW—THE NECESSARY CONDITIONS

Photographs by H. B. FULLERTON

WHY should anybody be afraid to grow celery? The reason why most amateurs fail with celery is that they plant it on a shallow, dry soil and do not give water often enough, or else they have ground wet



236. Celery seedling ready for first transplanting which will check the long tap-root and make a fibrous root-system that will stand the shock of transplanting better and make the work easier

to stagnation. While celery must have abundance of water, it demands good drainage. Therefore a deep soil is necessary and a wet place must be tile-drained. Soil for celery must be rich in nitrogen. Stable manure will provide the nitrogen for this purpose and increase the moisture holding capacity better than anything else. This is celery culture in a nut shell.

The early or August crop of celery is to be planted out in May, from seeds started indoors during February, and young plants need transplanting once indoors. The late or main crop is tended in the same way, but the seed is sown the last of March or April. If you have a well protected seed bed, or a coldframe, they can be started at once in either, and the improvised seed box is also fine for them. You may wonder why they have to be transplanted from the seed bed into another bed and thence into the garden, for it sounds like unnecessary work. You can try sowing the seed in drills in a bed, thin out well and allow the plants to remain there until it is time to set them out into the garden but this is what you will "go up against": Celery makes a long tap root, that is, a root which goes straight down into the earth with very few fine, side, or fibrous roots. When the tiny seedling is transplanted, the end of this tap root is usually broken, the fibrous roots are forced to start work, and they make a clump. Then when the second transplanting time comes,

the root is not so long, but bunched, and not nearly so liable to be badly injured. If the seedling is allowed to remain in the seed bed until setting out time comes, it has a root so long that it is almost invariably badly broken in lifting, and the shock being much greater the plant's progress is seriously retarded at the time when it needs to grow most quickly. Therefore, two transplantings are far ahead of one, and if one of these has been into an individual receptacle, that is better still.

When the seedlings appear, tend them carefully, turning the box each day that they may not be drawn in one direction toward the light. Keep them moist, but not wet, and not too warm, or they will be tall and spindly. If they are too thick, pull out a few weaklings and give the others a better chance. When the second leaf appears, and they are jostling and pushing elbows for room, transplant them into a second box,



237. A well-grown head of celery—solid, thoroughly blanched and clean. No earth between the stalks

deeper than a flat, or into a coldframe, whence they can be planted into the garden.

Having filled a flat with finely sifted leaf mold, mixed with sand, scrape the earth off even with the top of the box, shake or press it down with the hand, and, if the soil is very dry, sprinkle it lightly with a rose sprayer and let it stand a little while before sowing the seed. There are two methods for doing this; one is to sow or sprinkle the seed over the entire surface; the other to mark shallow drills, one or two inches apart, and sow the seed thickly in these, barely

covering it. I prefer the latter plan for in that way it is easier to lift the seedlings when the first transplanting time comes. Place the flat in a bright, moderately warm window, and water very gently when the surface shows a tendency to dry out. The seedlings appear in two or three weeks.

Celery loves light, rich soil, and the flavor of the plant is much finer from that kind of land, than when it is raised on a heavy clay, bog or peat soil. But it also demands plenty of water. Therefore a thorough preparation of the ground in dealing with the crop is more than usually profitable.

I reiterate, celery loves a very rich, light soil, well drained, and it craves plenty of water, often. Dig your trench, or bed, deep, put in some well-rotted manure, or, if you can possibly get hold of it, some hen droppings, and if the soot from the chimneys has not gone on the rose bed, add that too. A little bone-meal and wood-ashes will not do any harm, for celery is not subject to indigestion from over feeding.

Celery is an important crop for the home garden, as it occupies ground upon which some earlier crop has already matured. It can follow peas or spinach for instance. It likes nitrogen in abundance and so does particularly well as a second crop on the ground previously occupied by peas.

Have you decided which way to grow celery? If so let us set out the plants. The bed or row is made, raked fine, and the garden line run. Now make holes with the dibble, or, if your plants are too large, with a trowel, every six inches. Take up the plantlets carefully, having run a knife between them to separate the roots, and place them in a basket, box or pan, a few at a time. Set them one by one into the holes, firm the earth well around them, and at once protect each with a mulch. Proceed in this way to the end of the row. The mulch may be



238. Storing celery for the winter in the garden. The trench is lined with hay for warmth and cleanliness. Simple and costs nothing



239. What happens if care is not taken to keep the earth out of the heads when banking up. The inner leaves make a stunted crooked growth

straw, leaves, hay, or cuttings from the grass—anything to conserve the moisture in the soil while the young plants get started. Water well after the mulch is on, and you ought to have celery fine enough to take a prize anywhere.

There are two diseases of celery, rust and blight. The former is shown by yellowish spots on the leaves, the latter first by watery spots, then by black dots. Good seed and healthy plants will probably escape both, but if forced to enter into combat with them use Bordeaux mixture.

There are several ways to blanch celery, so as to get the fine white stalks for table. One way is to make long rows, setting the plants six inches or a foot apart and as they grow drawing the earth up around them to form a bank on either side. One great precaution to be taken in doing this is to be very, very careful not to get any dirt at all into the heart of the plant. Careful "handling," as it is called, is of vital importance. Gather the leaves up tightly in one hand, holding the outer ones well around the heart or the young leaves in the centre, and draw the earth up to the plant, firming it well. It is wise to have two people at this work, as it is difficult for one to manage alone, and the photograph shows you what happens, when the earth does get into the heart. You can make double rows in this same way, setting the plants criss-cross, six inches apart, just as rails are laid for an old-fashioned Virginia fence.

The plants may be set in single rows with enough earth drawn around them to hold them upright, and, when they are nearly grown, a board may be placed on either side, as close to the stems as possible, and almost to the top of the leaves. A strip or clamp is placed across the boards to keep them in position. A twelve-inch board would be wide enough, and the length in proportion

to the length of the row to be blanched. To make sure that the leaves are well up, slide the boards in edgewise, raising the leaves as you make it perpendicular.

If you wish to use drain tile, set the plants a little further apart, according to the diameter of the tile used, five inches, inside measurement, being quite large enough. In order to place a tile over a plant, it is necessary to tie the leaves loosely together, with raffia, soft twine, or, better still, with a strip of soft paper twisted, for it will fall to pieces when damp, and the plant will again be free.

Tile and boards are best for early celery, and they are both extremely useful for keeping the plant clean, while the tile has the further advantage of keeping it cool. Banking is better for late celery, as it can withstand frost better when protected by earth, and the covering is more natural.

Beds four feet wide, and as long as you choose, may be made, and the celery plants set into them ten inches apart, with boards placed perpendicularly along the edges, to hold the plants in an upright position. I should not care for this method, since it would render weeding very difficult, though it would save land space. This celery would either have to be dug up and blanched by storing, or protected by earth or hay where it stood. I really think, for the amateur gardener, single rows are the best.

Blanching is done in three weeks if the plants are growing vigorously as in September; later as the weather gets colder it will take fully four weeks.

Keep some celery in the garden until after Christmas. If you are too busy to make a pit and the celery is already banked, throw some hay over the top of the bank, a little more when colder weather comes, and, finally earth over that. If you can dig the roots and make a pit, it will be much easier to get at when you want it. Dig a small trench about one foot deep, line the sides with hay (salt hay preferably), place the celery in the trench, roots down, and close together, seeing that the hay surrounds the plants entirely and then bank up the earth, to make a miniature mound. Work from north to the south, so that you can enter this aboriginal dwelling from the southern end. If frost gets through the earth, it can't get through the hay. Thus the celery is safe and happy.



240. On the left, Cooper Cutting, the best celery for soups. In the centre, celeriac or knob celery, the fleshy root of which is cooked and eaten. On the right, Winter Queen, the most popular winter variety of a medium height. The taller a variety the more work in banking. A good height is a foot and a half

A Six-Dollar Water Garden — By William Macfarland New Jersey

JUST THE THING FOR THE SMALLEST CITY YARD — A THREE-BY-FIVE CEMENT BASIN IN WHICH ARE GROWN PINK AND YELLOW WATER LILIES AND THE WATER HYACINTH

Photographs by the author

IN my small city yard at Bordentown, N. J., I have a three-by-five water garden that has given flowers from June to October. I have had as many as eight water lilies a day. The walls and bottom of the basin are of single brick, laid in cement, and well



241. The miniature water garden on October 4th, showing the water hyacinth still in bloom

covered with cement to prevent leakage. The depth of a water garden should not be less than two feet, and the top of the wall not more than two inches above the surrounding surface, so that it may be the better protected from frost. After a month's exposure to the weather the pond is ready to be stocked with plants and fish.

STOCKING THE BASIN

Early one May I purchased two hardy water lilies at fifty cents each, a Cape Cod pink or *Nymphaea odorata* var. *rosea*, and a yellow *Nymphaea Marliacea* var. *chromatella*. The pink blooms well, is beautiful in form

and color and is deliciously sweet scented. The yellow has spotted leaves, is vigorous of growth and a profuse bloomer. They were planted in boxes about one foot square and deep. The richest soil, or soil and compost in equal parts, should be used. When they are placed on the bottom of the tank, it may be filled with water. I use a common hose with which to fill it.



243. The water hyacinth brought indoors and used for winter decoration. Photographed December 3d

Except by evaporation and overflow from rains the water in my pond is never changed. Neither have the plants been disturbed during the five years I have had the tank.

THE WATER HYACINTH

I find the water hyacinth a delightful addition to the pond. It has floating foliage, suspended roots which purify the water and

brilliant flowers of intermingled tints of blue during early autumn as shown in photographs made in early October. This plant is tropical and will require artificial heat in winter. A jardinière with some earth in it filled with water and a sunny window is all it requires. A few young plants may be taken from the pond for the purpose.

GOLDFISH VS. MOSQUITOES

Some fish will be an attraction and prevent mosquito breeding. A few small goldfish



244. The water garden on June 7th. German iris in bloom. Japanese iris to come later



242. Water lilies in bloom. Notice the bladders of the water hyacinth, the famous "million-dollar weed" that blocks navigation in Florida rivers. The bladders help the plant to float

will thrive throughout the year without care, but some crumbs of bread during spring and summer given twice a week will tame them. In early June they will spawn, depositing the eggs on the roots of the water hyacinth. If this be lifted and placed in a separate vessel containing water from the pond, many young fish may be hatched. I succeed well with a tub of water containing the water hyacinth. If left in the pond the young goldfish will be eaten by their parents. I have never known the water to become foul. Choice fish placed in it five years ago are still flourishing.

Frogs come and go. Some remain awhile, become tame and spend the winter to serenade us in springtime. Birds are attracted too. They drink freely, sit on the floating leaves while they bathe, and delight us with their singing.

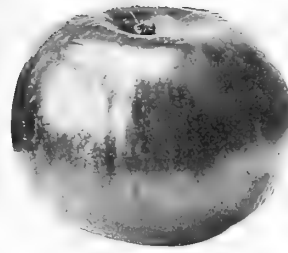
When freezing weather comes the water is lowered eight inches by dipping it out, when a coldframe is placed on. When hard winter sets in additional covering, of leaves or straw, is put around the wall and boards are placed over the coldframe.



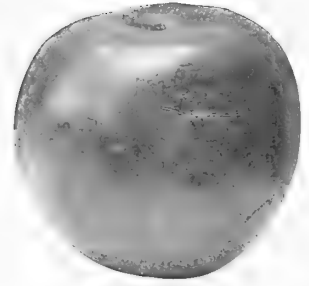
245. Northern Spy Apple. One of the best winter sorts for home use. Large. Deeply splashed with red



246. Esopus. Standard of quality. One of the best winter apples. Medium size. Bright red



247. Gravenstein. If suited to locality should be in home orchard. Large. Yellow striped with red



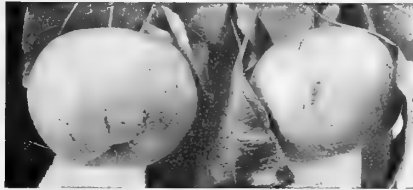
248. Lady Sweet. An excellent winter sweet apple highly valued for baking. Good size, red color

Quality Fruits for the Home Orchard—By S. W. Fletcher Cornell University

HOW TO SELECT VARIETIES OF HIGH FLAVOR INSTEAD OF COMMERCIAL KINDS IN WHICH QUALITY IS ALWAYS A SMALL ITEM—ONE SUBJECT IN HORTICULTURE THAT WELL REPAYS STUDY

Photographs by the author

A MAN may choose an ideal site for his orchard, prepare the land well, purchase first-class trees, care for them intelligently, and finally bring them into bearing, only to find that the varieties are not those that meet his needs. Perhaps, when select-



249. Hyslop. One of the two best crab-apples for home use. The other one is Transcendent

ing varieties, he was guided by the well meant, but frequently unreliable advice of the tree agent or the nurseryman. Perhaps he planted the varieties that grew on the old home place and which tasted so good in his boyhood days, forgetting that they might not be so well adapted to the locality in which the new home is situated. Perhaps he studied the catalogues and picked out the varieties which were described in the most glowing terms—usually a fatal error. Perhaps he did not himself know what sorts to pick out, and so followed the advice of an enthusiastic but not well-informed neighbor.

Mistakes in the selection of varieties arise in these and many other ways. The worst of it is that most of these mistakes cannot be remedied until after the trees have come into bearing, and the unwisdom of the choice is seen. The time and expense of caring for the trees are lost, and what is of greater consequence, the pleasures of a home orchard, which had been so eagerly anticipated, are delayed for several years. The undesirable varieties may be grafted over into other sorts, but it will take several years for grafted trees to come into full bearing and they are seldom quite as satisfactory as ungrafted trees.

The choice of varieties should receive the personal attention of every one about to plant. Do not follow the advice of anybody without

first looking into the matter yourself. No one who is not familiar with the climate, soil, site, and other conditions where the orchard is to be planted, as well as understanding your personal preferences and prejudices about varieties, can advise you intelligently. Above all other problems in home fruit-growing, this is one which it will pay the home-maker to investigate and decide.

SELECT VARIETIES WHICH THRIVE IN YOUR LOCALITY

The most common mistake in the home orchard is the planting of varieties which are not adapted to the locality. Varieties of fruits, like other plants, find some places congenial, some places tolerable, and other places decidedly uncongenial. We find mulleins in dry, stony pastures, not in the swales. Daises grow in meadows, not in copses. Every kind of plant, like every kind of animal, finds some places and conditions better suited to its needs than others. This is true of varieties of fruits. While some varieties, like the Baldwin apple, Crawford peach, Bartlett pear, and Lombard plum, are able to adapt themselves to a wide range of conditions, most varieties have a restricted habitat. Take this into consideration.

The point is not what varieties can be grown, but what varieties can be grown best. Doubtless there are several hundreds of varieties which can be grown with more or less success in your particular locality. Of this number, probably there are a few, fifteen to twenty-five perhaps, that come to greater perfection than the others. They seem to be especially suited to that particular soil and climate. Grow these and discard the others, however tempting they may be. It is far better to have only a few varieties, all of which grow to perfection than it is to have a large number of varieties, many of which are but indifferently successful. Disappointment usually awaits the man who disregards the fact that some varieties are better adapted than others to certain localities.

Many times the mistake is made of planting varieties which were favorites in earlier years on the old homestead. The desire to

plant these is commendable. But if the new location happens to be in another State, or in a region having a climate very dissimilar to that in which the old homestead was located, this desire often leads him to serious errors. Countless home orchards of the West are disappointing because they were planted with the varieties which were popular in the old homes in the East, regardless of the widely different conditions. There was some excuse for this in the days when the subject of variety adaption had not been studied and especially in newly settled country, where there were no previous fruits planted which might serve as a guide. But to-day there is no excuse for such mistakes.

The man who is about to plant an orchard should first of all inquire about the behavior of different varieties in his locality. He should visit his neighbors who have grown fruit, and learn their experience and seek their advice. If possible, he should visit neighboring orchards during the fruit season and compare the merits of different sorts; remembering that a slight difference in soil will sometimes make a great difference in the success of a variety; and that if the fruit of a tree that has not received proper care is of poor quality, the defect should be charged against the man who neglected the tree. The home fruit-grower will usually make a more satisfactory choice of varieties if he is thus guided by local experience than if he seeks the advice of some expert pomologist, who lives at a distance. However wide that expert's general knowledge of variety adaptation, he cannot make allowances for the minor variations of soil in a region. It is always a good plan, however, to get the advice of the horticulturist of your State Experiment Station, or of others who have an intimate knowledge of the horticulture of your section; test his advice by your own judgment and the neighborhood experience.

BEWARE OF NOVELTIES

It is amusing to look over the average nurseryman's catalogue. It would seem to the unsophisticated that all the varieties which it would really pay to plant have

originated within the past six years. But that is no reason why the amateur who is about to plant an orchard for the first time, should interpret literally all that he reads in the colored pages of the catalogue. The value of a variety is often in inverse ratio to the length of the description. A standard sort does not need a lengthy and glowing description; its merits are known. Buying horticultural novelties of any kind is essentially gambling.

It is for you to decide whether you can afford to lose. If you want to do the economical thing, you had better wait until the novelties have been fruited in your neighborhood. They will be cheaper then and you will find out their limitations and weak points. If you want them you can graft over a few trees or even one branch and get fruit of the novelty in three years or thereabouts.

This is not saying that novelties are not desirable, for all varieties, including the standard sorts of to-day, were once novelties. In commercial orcharding the novelty problem is perhaps even more important than in the home orchard, because the scale of operations is larger and someone's livelihood is at stake.

This sounds like trite and unnecessary advice—yet it is far from being that. Human nature is so charitable, and the average fruit grower is so sanguine that every year there are planted in the home orchards, thousands of trees of new, little known or worthless sorts, when good trees of standard varieties could be had for half the cost. Do not be misled by a glib tongue or a rainbow picture.

QUALITY VARIETIES FOR THE HOME GARDEN

The home fruit-grower raises fruit for the fun of it and for the eating of it; the market value is never his concern. This is important, because some varieties are first-class for market purposes, but fifth-class for home use. The demands of the two are different. The market wants an apple of medium size, high color, even form, free from blemishes; and the tree must be very productive, hardy and vigorous. It does not matter so much about the quality of what is inside the beautiful skin. The buyer finds that out after he has taken the fruit home. The Ben Davis apple represents the market type of apple. Some commercial varieties of grapes and strawberries are nothing but "bags of water." But the home fruit-grower desires quality—he grows fruit to eat! If he can find a high quality variety

which is productive, vigorous and hardy in tree, and shapely, smooth and beautiful in fruit, so much the better; but quality it must have. He is willing, if necessary, to sacrifice some other good points for the sake of getting toothsome. The Mother apple represents the home use type. The chief requisites of a commercial variety are, as a general rule, productiveness and good looks; the chief requisite of a home use variety is quality. It is true that some markets are now demanding higher quality varieties, and that oftentimes the very highest success in commercial fruit-growing can be secured by growing high quality sorts, and catering to a discriminating trade. It is likewise true that sometimes it is better to make a part of the home

planting of varieties noted more for un-failing productiveness than for high quality. Yet the quality ideal should be kept in mind, and the preference always given to the sorts which "melt in the mouth."

It is not difficult to make a general classification of varieties according to these two ideals—the commercial and the amateur. On one side we have varieties which are adapted for commercial use only; they bear well, look well, ship well, and sell well, but do not eat any too well. On the other hand we have varieties which are adapted for home use only; they eat well, and may have some of the other good points—but not enough to make them profitable market sorts. Then there is a large class of varieties which combine good or fair quality with great productiveness and attractive appearance, and so is desirable and profitable, either for home use or for market. Such well known varieties as the Bartlett pear, Baldwin apple, Bradshaw plum, Napoleon cherry and Crosby peach belong to this class. While the bulk of varieties in the home orchard should be of the high quality class, it is undoubtedly an advantage to have some of the mediocre class, on account of their productiveness.

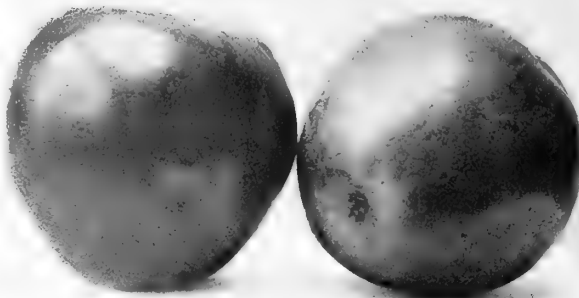
These three classes are, of course, general and arbitrary; but it will pay the home fruit-grower to study varieties from this point of view, as well as from the point of view of adaptation. It may pay him to grow the Flemish Beauty pear, for instance, on account of its high quality, when it might not be profitable to grow that variety for market, because of its susceptibility to disease. Place the emphasis on quality, not on quantity nor on appearance; but if you can find varieties which possess all three good points, when grown in your locality, so much the better. Happily for us, the high quality varieties are as likely to be bright colored, and attractive as they are to be dull colored and uninviting. Virtue is not necessarily wrapped up in a homely skin. By diligent search the home fruit-grower can usually find varieties which combine good looks with fine flavor, and yield well in the locality.

PLANT THE VARIETIES YOU LIKE

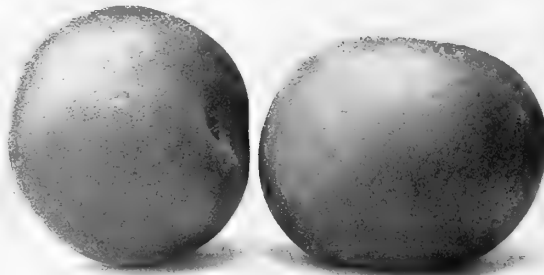
Everybody has personal preferences as regards varieties. I like McIntosh apples best; you may like Northern Spy apples best. I like Agawam grapes best because of their foxy flavor; you may like Brighton grapes better because they have no foxiness. The home orchard, like every-



250. Ben Davis. A late winter variety, usually of execrable quality, largely grown for market. No intelligent fruit grower will plant it for home use



251. Winesap. An excellent sort for late winter use, where it succeeds. Rich, very dark-red color, medium size, high quality. Bakes well



252. Roxbury. A popular russet apple which keeps very late into the spring, and even till the Early Harvests come. Quality good

thing else about the home, should be an expression of the personality and taste of the person who owns it. Other things being favorable, select varieties which appeal to your own palate. Competent judges have rated the Northern Spy apple eight to nine in quality on a scale of ten, and McIntosh only five to six, on the same scale, yet I prefer McIntosh. I have as good a right to my opinion as they have to theirs. So I shall plant McIntosh—they can plant Spy. Quality in fruits is only a relative term—rarely do two people exactly agree as to the desert merits of a certain fruit. If the varieties you like best can be grown in your section with any degree of success, by all means plant them, even though they are not commonly considered as desirable for your locality as some others; perhaps you can afford to overlook this point for the sake of having what you like.

There is another side to this question. If you plant varieties that you like best, you will be more likely to give them better care than other sorts.

It is certain that if the Clyman plum especially pleases you, your trees of Clyman will be cared for somewhat better than the Red June next to them. So far as possible, then, and remembering that no amount of care can offset marked uncongeniality of climate or soil, grow the varieties which you prefer.

HOW MANY VARIETIES?

The home orchard should have more varieties than the commercial orchard. In the commercial orchard, it is better to have only a few sorts on account of business reasons—the trees can be cared for, and the fruit harvested and marketed to better advantage. The home fruit-grower is not troubled by these economic problems. He desires, first of all, varieties which ripen in succession throughout the season, from very early to very late. This means that there shall be several, not a few, varieties. Study carefully the season of the different varieties which are candidates for favor, and select those which slightly overlap one another. Thus, in apples, a succession of five varieties might be Astrachan, Gravenstein, King, Baldwin, and Roxbury, which in many parts of the North, will give a supply of fruit practically the whole year, if it is stored carefully. Likewise in pears, a succession of five varieties might be Tyson, Bartlett, Bosc, Anjou and Winter Nelis. The relative season of varieties is usually fairly con-

stant, whatever may be the locality. Although Early Crawford peach may ripen a month earlier in Georgia than in Massachusetts, it will ripen in the same order with reference to other sorts—after Early Rivers and before Lemon Free, for example.

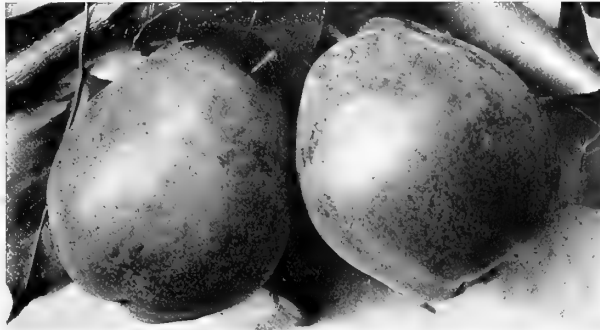
The number of varieties which may be chosen will depend upon the area to be planted, and the congeniality of the location, as well as upon the tastes of the planter. If the area which can be used for fruit-growing

is limited, it will be better to plant only summer and fall varieties of apples, because the winter sorts are a staple and can usually be bought to advantage. The smaller the area the more should be grown early and perishable fruits, instead of long keeping fruits. When space will permit, it is usually best to plant at least two trees of a variety, as there is sometimes a marked difference in the value of the fruit on two trees of the same variety. The main points to remember in connection with this subject are: Plant as many of the varieties which "fill the bill" as space will permit; aim to have a succession of varieties from earliest to latest; on very small areas, plant summer or fall sorts, not winter varieties.

GENERAL SUGGESTIONS ON VARIETIES

The man who attempts to advise another man, who lives in a different locality, what particular varieties to plant, is almost sure to go more or less contrary to the local experience in the inquirer's neighborhood. When asked "What varieties shall I plant?" it is always safest to answer "It depends"—and then tell on what it depends, leaving the inquirer to answer his own query. Then if he makes a mistake the blame will not be yours. The following are a few of the varieties which have been found especially satisfactory for home planting in various parts of the country. Most of the varieties in this list are of high quality and hence are especially desirable for the home fruit garden. Some, however, are of but medium quality, and are included in this home list only because of their cheerful habit of giving a large quantity of fair quality fruit under a great variety of conditions. Hence they are valuable for the amateur. Perhaps two-thirds of the varieties in this list it would be most unfortunate for you to plant in your orchard, because they may have been found, by trial in the neighborhood to be not adapted to the locality. Some of them, however, are just what you are looking for. This list includes only a few of the varieties which it might be desirable to plant. Use it, therefore, as a general suggestion, not as a specific guide. Local experience is the final court of judgment before which all varieties recommended to your consideration from any outside source should be tried.

The words in parentheses in the following list are a part of



253. Kieffer. Which the home fruit grower should avoid. Usually very poor quality fresh, but good canned. Less likely to blight than most pears



254. Flemish (Beauty). A standard midseason variety of high quality. Its chief drawback is its liability to scab. This can be controlled by spraying



255. Seckel. The standard of quality in pears and one of the best known. Grown everywhere in home orchards. Small, russet-red. Ripens midseason



256. Elizabeth (Manning's). An excellent little early pear, which makes up in quality what it lacks in size. The tree is usually very productive

the name of the variety in popular usage, but which should be dropped as superfluous.

APPLES

Early Varieties: Benoni, Bough (Sweet), Chenango, Early Harvest, Early Joe, Early Strawberry, Garden Royal, Golden Sweet, Ingrain, Jefferis, Maiden Blush, Porter, Primate, Red Astrachan, Red June, Sops-of-Wine, Summer Pearmain, Summer Rose, Williams (Favorite), Yellow Transparent.

Midseason Varieties: Dyer, Fall Pippin, Fall Wine, Fameuse (Snow), Gravenstein, Jersey Sweet, Oldenburg (Duchess of), Palouse, Rambo, St. Lawrence, Shiawasse, Wealthy.

Late Varieties: Bailey (Sweet), Baldwin, Esopus (Spitzenburg), Golden Russet, Grimes (Golden), Hubbardston, Jacobs Sweet, Jonathan, Lady Sweet, McIntosh, Mother, Northern Spy, Paragon, Peck Pleasant, Pewaukee, Pomme Gris, Red Canada, Rhode Island (Greening), Ribston, Roman Stem, Roxbury, Stayman Winesap, Sutton, Tolman (Sweet), Tompkins King, Wagener, Westfield (Seek-no-further), White Pear-



257. Bartlett is grown perhaps more than all other pears combined. Succeeds nearly everywhere and is uniformly productive of good fruit. Luscious

main, Winesap, Yellow Bellflower, Yellow Newtown (Albemarle), York Imperial.

APRICOTS

Alexander, Early Golden, Moorpark, Royal.

SWEET CHERRIES

Early Varieties: Black Heart, Coe, Early Purple (Guigne), Elton.

Midseason Varieties: Downer, Napoleon (Royal Ann), Rockport, Spanish (Yellow), Black Tartarian, Governor Wood.

Late Varieties: Bing, Republican (Black), Windsor.

SOUR CHERRIES

Early Varieties: Choisy (Belle de), Eugenie (Empress), May Duke, Philippe (Louis).

Midseason Varieties: Hortense (Reine), Montmorency Ordinaire, Ostheim.

Late Varieties: Brusseler Braune, Late Duke, Magnifique (Belle), Morello.



258. Green Gage. The standard of excellence for quality in plums. Medium size. Color green. Flavor most luscious and aromatic. Very sweet

PEACHES

Early Varieties: Alexander, Amelia, Early York, Fitzgerald, Hale, Mountain Rose, Rivers, St. John, Triumph.

Midseason Varieties: Chairs (Choice), Champion, Crosby, Early Crawford, Foster, Late Rareripe, Lemon Cling, Muir, Old-mixion Free, Reeves Favorite, Susquehanna.

Late Varieties: Fox, Heath Cling, Late Crawford, Lemon Free, Smock.

PEARS

Early Varieties: Bartlett, Bloodgood, Clapps, Elizabeth (Manning's), Gifford, Osband, Summer Doyenne, Wilder.

Midseason Varieties: Angouleme, Anjou, Bosc, Boussock, Comice, Flemish (Beauty), Gray Doyenne, Howell, Louise (Bonne de Jersey), Lucrative, Seckel, Sheldon.

Late Varieties: Danas Hovey, Glout Morceau, Lawrence, Malines (Josephine de), Patrick Barry, Vermont (Beauty), Winter Nelis.

PLUMS

Early Varieties: Abundance, Bradshaw, Clyman, Columbia, Jefferson, McLaughlin, Lombard, Red June, Wild Goose.



259. Golden Prune is a plum of most delicious flavor which should be grown in the home orchard wherever it succeeds. Large. Yellow. Midseason

Midseason Varieties: Bavay (Green Gage), Burbank, German Prune, Golden Prune, Hawkeye, Imperial Gage, Rockford, Shropshire (Damsun), Wolf.

Late Varieties: Green Gage, Italian Prune (Fellenburg), Grand Duke, Monarch, Miner.

AN OFFICIAL LIST

In the judgment of a competent committee of the American Pomological Society, all the very high quality varieties in this country which are more commonly grown are included in the following list, which includes all varieties which have been marked by this committee with nine or ten points on a scale of ten.

Apples: Jumbo, Stanstead (Rose of), Belmont (Waxen), Belle Bonne, Benoni, Bethel, Mrs. Bryan, Bullock (American Golden Russet), Dyer (Pomme Royal), Early Harvest, Early Joe, Esopus (Spitzenburg), Fall Pippin, Fall Wine, Fameuse (Snow), Garden Royal, Garfield, Gravenstein, Green Newtown, Grimes (Golden), Hubbardston, Ingram, Jefferis, Jonathan,



260. Grand Duke. A valuable plum in the home orchard on account of its late season and very large size of the fruit. Quality fair

Northern Spy, Pomme Gris, Porter, Roman Stem, Stayman Winesap, Summer Pearmain, Swazy, Tompkins King, Westfield, (Seek-no-further), White Pearmain (White Winter Pearmain), Yellow Bellflower, Yellow Newtown (Albemarle).

Sweet Cherries: Bing, Centennial, Coe (Transparent), Downer, Elton, Lambert, Lewelling, Rockport, Spanish (Yellow), Tartarian (Black).

Sour Cherries: Brusseler Braune, Eugenie (Empress), May Duke.

Peaches: Bergen (Yellow), Early Crawford, Early York, Fitzgerald, Forrester, Foster, Heath Cling, Honey, Late Admirable, Late Crawford, Late Rareripec, Lemon Cling, Lemon Free, Mary (Choice), Mountain Rose, Muir, Oldmixon Free, Royal George, Susquehanna, Triumph.

Pears: Anjou, Bosc, Comice, Dana Hovey, Gray Doyenne, Heyst (Emile de), Lucrative (Belle), Rostiezer, Seckel, Tyson, Vermont (Beauty), White Doyenne, Winter Nelis.

Plums: Agen (Prune d', French Prune, Petite), Bavay (Green Gage), Columbia, Golden Prune, Green Gage, Hale, Imperial Gage, Italian Prune, Jefferson, Kelsey, McLaughlin, Purple Favorite, Rockford, Surprise, Transparent (Gage), Willamette.

Many of these varieties are grown only to a limited extent, and almost entirely for home use. This list may serve as a general guide. If some of the varieties here mentioned thrive in your locality they should by all means be given the preference over others of poorer quality.



261. *Achillea, The Pearl*, a hardy perennial, with double white flowers half an inch across. It grows a foot or two high, blooms all August and September, and is good for cutting. It has roots like quack grass, and will spread in waste places

damp and cold and should be drained. Weeds and neglect are impedimenta over which it rises in triumph to shame the negligent gardener—not you! But to have it at its best, give it a dry moderately fertile soil, a sunny situation and such ordinary care as you give to perennial phloxes, bleeding-hearts and larkspurs. You will not regret the attention, being amply repaid by the greatly increased vigor of growth.

Nothing is easier to propagate. All you need to do is to buy, beg or otherwise obtain a clump from some neighbor in the spring. Break this up into pieces containing a few shoots with roots attached and plant these smaller clumps in permanent quarters. In a year or two they will have full possession of the allotted space and you need only to restrain them from encroaching upon the preserves of other plants. Like quack grass, the underground stems are long, white and jointed and turn up at the tips to form aerial stems. So if you cannot get an adequate supply of plants make cuttings of the underground parts, grow them in a greenhouse, a hotbed, or even in the house like other common slips, and transplant them to the garden. From then on they require only an occasional weeding and stirring of the surface until they occupy the ground. Could anything be easier?

M. G. KAINS.

New York.

New Points in Raising Cardinal Flowers

Q. Why do I always fail to germinate seeds of *Lobelia cardinalis*?
Ontario.

A. The chances are that the seeds sprouted long before you expected them and that you destroyed the minute seedlings thinking they were weeds. The seeds usually germinate

in six or seven days. That is the "secret" of cardinal flower culture.

Another reason why most people fail with the cardinal flower is that the small plant which they buy from the nurserymen usually has no offsets and after flowering it dies because it is a biennial. The right way is to purchase at least a half-dozen plants, set in a clump, and nurse any self-sown seedlings which appear in August. Or gather seed as soon as ripe and sow in a seed-bed prepared by thoroughly fining the soil in a shaded part of the border, where the soil does not dry out entirely. Scatter the seed on the surface, cover very lightly, water carefully and young plants will be seen in seven days. Protect the seed-bed by stakes or labels, or someone will surely kill the plants.

You can get cardinal flowers to bloom the first year by starting them under cover in March. Sow seeds in flats filled with a light soil having plenty of sand and leaf mold, and sprinkle daily with care. Prick off the young seedlings into other boxes or pots as soon as they are large enough to lift, and set out the young plants in the garden in May.

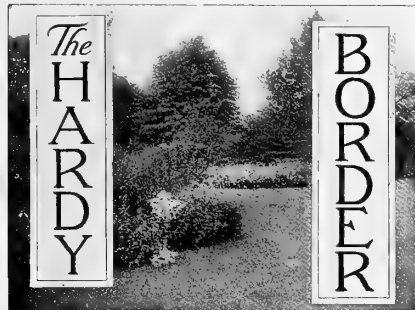


262. The cardinal flower (*Lobelia cardinalis*), one of the most famous American wild flowers. Many people have tried to raise it from seed and have failed. The "secret" of its culture is explained above

The cardinal flower grows wild along stream banks, but does equally well in deep garden soil.

Natural Aids Against the Asparagus Beetle

WE have kindly insects to help us in the destruction of this pest. The lady-bug, some snake-feeders, or dragon-flies, and wasps, and the spined and bordered soldier-bug—all these eat the larvæ of this beetle. Ducks and chickens are fond of them; air-slacked lime dusted on the dew-wet leaves destroys the pest; or the ends of the branches where they congregate may be cut and burned. The same remedies hold good for the spotted beetle, but his favorite place of hiding is in the berry, so these should be cut and burned as fast as they form.



The Pearl Achillea

THE Pearl Achillea (*Achillea Ptarmica*, var. The Pearl), probably gives more satisfaction than any other white-flowered hardy perennial plant that blooms during its season. If you want bouquets you may cut without stint. If you want a sombre spot lighted up, it is just the thing. Its profusion of little, full-double flowers, jostling one another on the tall, stout stems, form a veritable snow bank from midsummer to mid-autumn. If you love flowers, but have no time to fuss with them and are therefore looking for a plant that is perfectly hardy, easy to propagate and cultivate, seek no further. The Pearl is a pearl indeed.

It does not insist that the soil be of some special quality, very rich, or in prime condition. It does not refuse to give a reasonable handful of blossoms even when the ground is



A Garden of Wild Flowers in a City Yard

IT was just a narrow stretch of ground on a city lot, shadowed by closely-built houses, and a high, tight, board fence, but the wild flowers flourished there, although the conditions were very different from those of their natural habitat.

The beginnings of the garden were made twelve years or more ago, before the danger of the extermination of our native plants was fully realized. The woods, however, were even then receding before the growth of the city of Rochester, making longer and longer trips necessary to bring us to the haunts of our wildwood friends. So, because we loved them; because if we could not visit them in their native retreats we still longed to see them; because it was only a question of time before many of them would be ruth-

lessly destroyed, when we found them at all plenty we took a few of them up tenderly with as much of the soil as possible and carried them home.

It was always a matter of surprise that so many and such different species of plants should flourish under such apparently unfavorable conditions. The soil was naturally rather heavy and poor, but many basketfuls of wood's soil and leaf mold were uncomplainingly tugged home and added to it, and the leaves with which nature covered the bed in the fall were allowed to decay and then were carefully dug in around the roots of the plants. Many of our native plants, and especially the early spring flowers, readily adapt themselves to the wild-flower garden, but none of them will do this without more or less care.

The natural thing for everyone to do in beginning a wild garden is to start in the spring when everyone feels an impulse for gardening. When hot weather comes, the desire for gardening wanes, and many wild gardens contain nothing but the delicate shade-loving flowers of May and June. It would be better if we all began with the summer and autumn blooming wild flowers which are generally more robust and sun-loving. These require less care than the spring wild flowers, and few of them are in danger of extermination. Naturally everyone who begins a wild garden wants to start with lady-slippers, and all the rare and delicate things. These are precisely the things that are in danger of extermination, and people ought not to take them until they have had some experience in gardening.

The second commonest mistake is to bring in the plants with insufficient balls of earth. It is only fair to others that when we remove rare plants from the wild to our gardens we should take pains to duplicate natural conditions as far as possible. Lady-slippers and other orchids almost never thrive permanently in gardens. Most of them require a combination of shade and leaf mold and more moisture than it is convenient or possible to give. Moreover, it is likely that there are certain undiscovered elements in the cultivation of hardy orchids. It is a great deal better to leave the orchids in the wild and join the Wild Flower Preservation Society of America, than to bring lady-slippers into a garden where it is impossible to duplicate natural conditions.

The glory of the garden was in the trillium blossoms. Roots of white ones (*Trillium grandiflorum*), were carried home year after year, until several fine clusters adorned the bed. One clump, though seemingly planted in about the worst possible place, close up against the board fence, increased in size until last year it bore forty blossoms. When these were in bloom, all at once, the plant was a beautiful sight. Most of the flowers were of very large size and of the purest white. The red-flowered trilliums (*T. erectum*), flourished also, making a pretty contrast to the white ones, and the dark-red fruit made the plants attractive after the blossoms had withered. Trilliums are so beautiful and so deserving of cultivation, that it is a pleasure

to note that several dealers in native plants catalogue them. They flourish better if transplanted after the bulbs have ripened than when taken up in bloom, and they require two years to become really well-established.

The lady's slippers or cypripediums, were the choicest occupants of the garden. The greatest pains were taken in transplanting them from their native homes, a ball of earth being lifted with them and care being exercised not to injure the roots. Leaf mold and sand were mixed with the common soil, and for several years they flourished finely. They did best in a partial shade, and with *C. spectabile* it was found necessary that the ground should be kept moist all the time. After a few years they gradually failed. *C. pubescens* continued vigorous longer than *C. spectabile*, but at last it also failed to put in an appearance, and as both species were becoming scarce in the woods, no effort was made to replace them. *C. parviflorum*, with its quaint little blossoms, survived the longest, but last season only two or three stalks came up, and these produced no flowers. Dealers in native plants are now offering the cypripediums for sale, and it is not necessary to devastate the woods in order to obtain them. I am quite convinced that they are not difficult of cultivation when natural conditions are imitated and continued, but those already accustomed to cultivation would undoubtedly



263. The best time to dig trilliums is in August, when the "bulbs" are ripe



264. The foam flower or false mitrewort (*Tiarella cordifolia*). Color white



265. The common blue flag of the swamps flourishing in ordinary soil near the steps



266. A pale-yellow-flowered lady's slipper thriving temporarily in a city yard (*Cypripedium pubescens*)

do better than those transplanted from the woods and swamps.

Clumps of bloodroot cheered us early in the spring with their pure-white, delicate-petaled blossoms. Where a little sunshine visited them they came out early, and other bunches, more shaded, bloomed a week or so later, thus giving us a longer opportunity for enjoying this lovely flower, whose only fault is its transitoriness. It is easy to grow. It has even been seen growing on rubbish heaps in cities.

The delicate little spring beauty grew close beside some of the clumps of bloodroot in a very shaded, unfavorable location, but the dainty plants were forgiving and every year put forth a few blossoms, as if hoping for better days. Label the plants you find this spring and in midsummer you may gather the little round brown bulbs about the size of a pea, which lie on the ground.

Hepaticas, white, pink, and blue, grew here, there, and everywhere, delighting us with their delicate coloring and downy new leaves, so carefully folded. No other wild plant better repaid transplanting and cultivation. Some amateur Burbank ought to improve the hepatica.

Early visits to the woods before any flowers were in blossom, were often rewarded by finding specimens of the brilliant scarlet cups of the fungus called *Peziza coccinea*. A partially decayed branch covered with these was carried home, laid in a shady place and carefully covered with leaves. It was by no means expected that these gay fungi would reproduce themselves under such different conditions, but they did, and year after year they appeared, making an interesting and attractive feature in our little wild-wood garden.

Though the cardinal flower (*Lobelia cardinalis*), naturally grows in wet places, usually along streams, it accommodated itself very graciously to our drier ground, perhaps because it was planted near a door where water was frequently dashed over the plant. Beginning to bloom in July, the long spikes of blossoms continued opening to the very tip, and numerous side shoots would spring out from the main stalk, thus prolonging the flowering until the latter part of August. The brilliant blossoms shone like a flame. It does well in ordinary garden soil, but its weak point as a garden plant is that its spike gets ragged, the lower flowers going to seed before the uppermost open. Some nurserymen have plants in which this defect is overcome. Some people complain that they cannot make the seeds grow. If sown as soon as ripe in a prepared bed of finely pulverized soil without covering, they germinate in seven days. In the spring they should be sown in flats indoors.

A single plant of jewel weed was once carried home. From it sprang a host every year. They tried their best to monopolize the garden, but did not quite succeed. I think the plant was *Impatiens fulva*, but instead of being yellow the flowers were always a beautiful shade of rose color, never varying and never going back to what was probably the original hue. The flowers were spotted

with brown like *I. fulva*, and in all but color they perfectly resembled that species.

A number of species of ferns was scattered among the other plants. A symmetrical clump of royal fern was always thrifty, and also one of cinnamon fern. The sensitive fern and *Pteris aquilina* grew rampantly; and the little polypody and the Christmas fern led a tranquil existence.



Flowers in the Tulip-bed Before the Tulips Bloom

Photograph by the author

THE pictures of the "sudden transformation" in the Boston Public Gardens on pages 62 and 63 of THE GARDEN MAGAZINE remind me of the rock cress (*Arabis alpina*) I used to grow in my tulip bed. The illustration shows that it blossoms before the tulips have produced their flowering stems, and how it covers the ground without interfering with the tulips. The abundant snow-white flowers, about three-quarters of an inch in diameter, against the foil of tulip leaves make a very striking effect, usually after the middle of April. The plants are of short-creeping habit, perfectly hardy, and are adapted to any but a wet situation.

It would seem more satisfactory to have a display of flowers over a tulip bed before they flower rather than after, for usually if the beds are in a prominent position and the tulips are of the ordinary kinds, one prefers to dig them up, after the new bulbs commence to form, and let them ripen in some obscure corner where the browning leaves will not be in evidence. This of course for the tidy gardener—the beginner does not mind ripening leaves which are signals that all is proceeding well for another season. *Arabis alpina* and *Arabis albidia* are perfectly hardy perennials and may be raised from seed, division of the roots or from cuttings.

Another good covering for bulb beds if kept in subjection, is our old friend moneywort or creeping Charley (*Lysimachia nummularia*). The cheerful yellow flowers of this little vine distract one's attention from ripening leaves, and when bulbs are ripened the plants may be allowed to grow or may be ruthlessly thinned down to give place to some suitable annual.

The most satisfactory bulb bed for the amateur is one that contains plants which bloom in as long a succession as possible. For instance, there is six weeks difference in blooming time between the earliest and latest tulips and a great variety in habit and coloring, so for a small garden why purchase by the hundred those matching exactly in form and coloring? Better by far buy a few of every section—early, midseason, late—Von Thols, bybloems, bizarres, parrots, breeders, mix them up indiscriminately, and plant as happens, here a dense clump, and there sparsely. Toward the front of the beds plant some snowdrops, scillas, hyacinths, etc., and in the spring there will be new combinations and effects every day.

New Jersey.

J. N. GERARD.



267. Two crops of flowers in the same bed. The rock cress (*Arabis alpina*) carpets the ground all summer. It blooms before the tulips. Flowers white about three-quarters of an inch across. Can be raised from seed sown in the bed if the tulips are to remain for years. A hardy perennial, blooming the second year from seed



How to Grow China Asters for a Prize Competition

THE following instructions were given to competitors in the R. B. Whyte aster growing competition, for school children, at Ottawa in 1903.

PREPARING THE SOIL

Dig the ground as deep as the spade will go. If the soil is at all hard or lumpy turn it over two or three times, breaking all lumps each time. If the soil is not very good, the last time of digging spread well rotted stable manure two or three inches thick over the bed and dig it in, covering it well with earth so that it will not touch the seeds; then rake the surface as smooth and fine as possible. It is very important that the earth should be as fine and smooth as you can make it.

PLANTING THE SEED

When ready to plant, make a straight line with a pointed stick using a long board or a string as a guide; a board is best as you can stand on it when working. Press hard enough with the stick to make a trench about half an inch deep, drop the seeds, one at a time, about one and a half inches apart. When the row is full cover the seeds with half an inch of earth; then pat the surface firmly with the back of the spade or hoe to bring the earth into close contact with the seed. Make the rows twelve inches apart.

WEEDING AND CARE

It is well to put a stick at each end of the rows to show where the seeds have been planted. If the rows are not marked you might pull up the aster plants along with the weeds when they are small. As soon as the plants are visible, pull out all weeds; after the first weeding rake between the rows with a small sharp rake twice a week, and no more weeds will grow; they will all be killed before they appear above the surface.

If the weather should be very dry, it will be well to water the beds once a week, putting on enough water to wet the earth at least one inch deep each time, but do not water unless it is really necessary.

TRANSPLANTING

As soon as the plants are three or four inches high they should be transplanted as they are too close together to flower in the seed bed. The best tool to take them up with is a garden trowel, but a tablespoon will do very well. One plant to a foot of row may be left in the seed bed to flower there, all the rest must be taken up, one at a time, with all the earth that will stick to the roots and

planted in another bed of the same kind, or wherever there is room for a few plants, always being careful that there is at least twelve inches between each plant. Make the holes big enough to take in the ball of earth and deep enough to allow of the plant being half an inch deeper in the ground than it was in the seed bed, cover with fine soil to the level of the bed and press gently about the roots; not too hard, or you might break the delicate roots. Always transplant after sundown and after rain if possible. If it must be done in the morning put a teacupful of water in each hole and shade from the sun for a day or two.

FROM TRANSPLANTING TILL FLOWERING

All that is necessary to do after transplanting is to keep down the weeds, and keep the

surface soil open and porous by frequent raking—at least twice a week—rake very lightly near the plants so as not to disturb the roots. In a very dry season water the plants from time to time, giving a large cupful to each one, and rake afterwards.

PREPARING FOR EXHIBITION

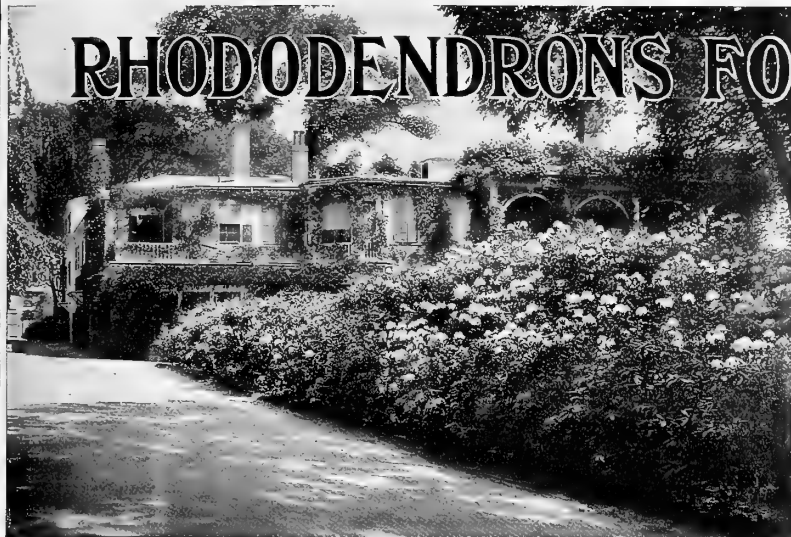
When cutting the flowers for the Exhibition, cut with as long stems as possible, with all the leaves on, unless they are damaged. All torn leaves should be cut off.

Show the six white flowers in one vase; in the other entries the three colors must be in three separate vases or bottles. Water for the flowers can be got at the Exhibition Hall. All the flowers must be brought to the hall between 4:30 and 6 o'clock on the day of exhibition.



268. The china aster is one of the best hardy plants for cut flowers and for planting in the garden. Transplant from seed beds for summer flowers. Seeds sown in the open border in May give strong plants later in the season. Try wood-ashes to overcome the root aphid which often attacks the aster

RHODODENDRONS FOR EVERY PLACE



Rhododendrons are ideal plants for large or small gardens. They are perfectly hardy, thrive in the shade and being evergreen are as beautiful in winter as in summer. Their great clusters of flowers in June and July make a gorgeous effect planted in masses or as single specimens on the lawn.

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The Cottage Gardens have an immense stock of Rhododendrons, Kalmias and Hardy Azaleas (in sorts) and will make special quotations for Spring delivery up to May 15th.

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The distinctive features are—

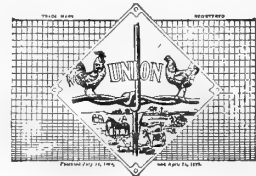
STRENGTH—The horizontal members are of two steel wires twisted together, single wire uprights immovably fixed, where they cross cables, by the patented "Union Lock." We make our own wire, galvanize it heavily with *new* prime western spelter and weave it into fence.

ECONOMY—The construction of "Union Lock" fence makes unnecessary the use of top rail or bottom boards, half the number of posts needed for netting are sufficient, this fence 60 inches high successfully meets all requirements and the mesh $1\frac{1}{4} \times 3$ at the bottom gradually increasing to 4×3 at the top, prevents the escape of chickens small or large.

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DURABILITY—Testimony of those who have used "Union Lock" fence proves that it will wear longer and better than any other fence or netting.

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Dress and Tools for Women
Gardeners

HERE is a practical working dress for the woman who personally delves in her garden: A loose shirt waist, with the addition in colder weather of a heavy sweater; a stout tweed skirt for the spring and fall, replaced in summer by one of linen or denim, cut a good three inches off the ground. Over that a seersucker apron, with two capacious pockets to hold the necessary labels, twine, pencil and shears. An improvement on the ordinary gardening gloves is, to take a pair of old loose dogskin gloves, sew pieces of seersucker on their tops, drawn up and gathered in with elastic bands above the elbows. These tops will prevent the sifting in of sand or gravel.

For a sensible head-covering, a sun-bonnet with "poke before and cape behind" is advocated. But an old-fashioned Leghorn hat, tied on with ribbon, will be preferred by some. My spring gardening in March is such windy work that if my hat were not well anchored I fear I should accomplish but little.

As to tools: First buy a good pair of solid steel pruning shears (do not be beguiled into taking "ladies' light pruning shears"), a solid steel trowel, an angle-trowel, a round dibble for transplanting, an Excelsior hand-weeder, a small hand-fork, a rubber plant-sprinkler, a ball of stout twine, a bundle of raffia for tying up the smaller flowers, and a light small-sized rush basket in which to carry these tools. Above all things, have your own small-sized, but strong, spade and rake; they are handier for a woman to use than the unwieldy man's size. Two joys of my life for use in the garden are wooden labels painted on one side, and countless wooden dowels. In my perennial beds I use quantities of the ten-inch wooden labels, for I sometimes forget the spots of the perennial roots. I found that at any planing mill I could buy seven-eighths-inch dowels, twelve feet long, at nine cents apiece. These are cut into four- or six-foot lengths, as needed, and painted a dull green color. A wet day in spring is excellent for the task. When well sharpened at one end they make excellent substitutes for the more finished plant stakes of the seedsman.

For the smaller-sized plants, buy slim bamboo rods in bundles of 100 or 150, from any seedsman, and cut into the required lengths with the steel pruning shears.

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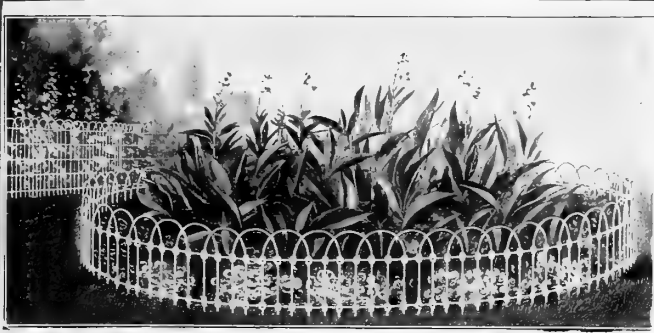
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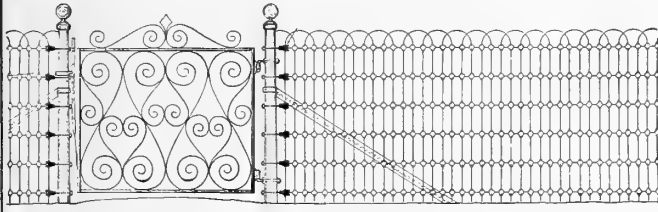
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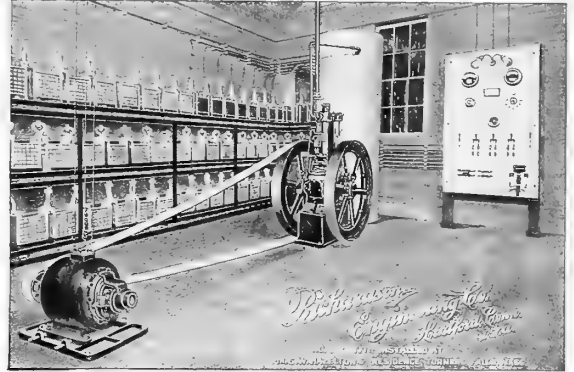
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ONE of the home made "contraptions" that we like best is a box which we use for the following purposes:

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To smoke house plants for green aphid or plant lice.

To store summer bulbs as cannas, dahlias and gladioli until time for spring planting.

To store house-grown bulbs of tulips, hyacinths, etc., after the foliage dies till time for fall planting.

We made the box about two and a half by three feet and nearly a foot high. In each end we bored about a half-dozen holes for ventilation. Against the holes inside the box we tacked window screen netting to keep out the mice. We put the hinges for the cover half way, instead of at the back, for lightness in handling. A hook and screw eye provide means for shutting it securely.

AS A FUMIGATOR

This box is kept busy about all the year round. In the fall, when house plants are



269. A home-made box that is useful all the year for fumigating house plants and for storing bulbs. The holes let the smoke escape or ventilate the bulbs so that they will not shrivel or decay. It is also mice proof

brought in before frost, the box is useful in giving them a dose of tobacco smoke to get ahead of the green aphid. We place the box on end, in the cellar, so that the cover assumes the position of a door. The plants are set in as close as possible and in their midst is placed a tin containing two or three live coals covered with a handful of dampened tobacco

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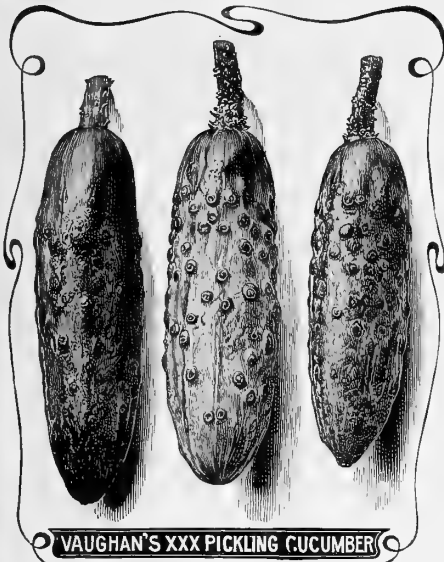
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A SUBURBAN HOME

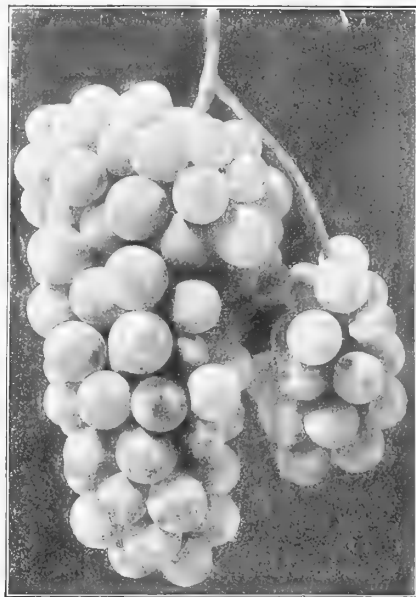
in the most accessible Home Section of New Jersey, is the ideal of every New York business man. The best home sections are located on the

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NO garden is complete without a sufficient number of grape vines to supply an abundance of this delicious fruit. For nearly 40 years we have been furnishing high-grade vines for this purpose.

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T. S. HUBBARD CO.

Grape Vine Specialists

Fredonia, N. Y.

Iron Reservoir Vases



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Lawn Settees
Manufactured by
McDONALD BROS.,
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The largest manufacturers of these goods in America. Send for catalogue.

Are You Late About Planting?

Late planting should be done with northern stock which has not advanced too far in growth. Plants from Vermont don't start so early as those from farther south and may be set with success after the more southern dealers have finished shipping. My new catalogue offers about a thousand kinds of hardy ornamentals in plants, bulbs, trees, shrubs, vines and seeds, which have been tested for cold climates. These can be set as late as any in the U. S. from the open ground. Prices are low for the quality of stock. Catalogue free to those who pay the postage—a 2c. stamp.

FRED'K H. HORSFORD, Charlotte, Vt.

stems. An old carpet is thrown over the top to cover the ventilating holes. Those at the other end are, of course, stopped up by the cellar floor. We then fasten the lid and leave it to smoke. This method gives the plants a thorough smoking without letting enough escape to be annoying upstairs.

TO KEEP DUTCH BULBS COOL

After being used for this purpose, it is about time to prepare the box for potted bulbs. For this use it is put in a cool, partially dark cellar. The box provides added darkness for the root-growth of the bulbs. The holes permit of the ventilation necessary to prevent mold from forming.

ITS USES IN WINTER

When our last pot of bulbs is filled with roots and has been taken upstairs, the box is useful for storing in a dry frost-proof place summer bulbs (dahlias, cannas and gladiolus) which have been dug at the time of frost and have since been drying.

By the time the summer bulbs are taken out to look over for spring planting, the winter blooming bulbs have ripened their foliage and are ready to set in the box until fall. The ventilating mouse-proof holes are an advantage for all these purposes.

We made two of these boxes in the days when we raised more winter-blooming bulbs, and the extra box is very useful in the summer for keeping all sorts of little garden implements which are easily scattered.

New York.

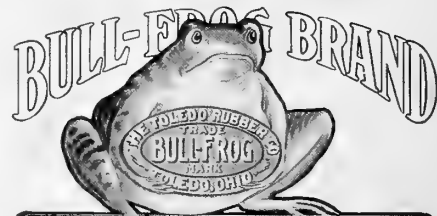
IDA M. ANGELL.

Home-Made Devices for Transplanting Vegetables and Flowers

THERE are innumerable receptacles which can be used for starting seedlings, and no doubt several will suggest themselves to you. To me, one of the chief charms of gardening is the fact that there is always something new or different for each year and for each season, as well as for each operation.

THE USEFUL TIN CAN

Probably the tin can is the most popular transplanting device. If set on the stove until the solder melts and the seams open, the bottom can be removed and the sides held in shape by a piece of wire twisted around the middle. A board or a trayful of these is carried into the garden at planting time and each is slid off into the hole prepared to receive the plant. A knife is then run round the inside of the can, and the tin is lifted upward, leaving the soil and roots free. The can may be left in the hole with the plant, in which case the wire should not be loosened, but the can should be drawn up until the top of it is about two inches above the soil. This forms an absolute protection against cut-worms, and is specially valuable in new soil, or sod land when first under cultivation. If you raise tomatoes in cans, I would certainly advise this method of transplanting, for it is the most annoying thing in the world to have an entire plant cut off just at the top of the root. Other insects



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OUR SEAMLESS TUBE

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Bull-Frog Brand Seamless Tube Hose which is made with an extra heavy wall and especially designed to withstand short turns without kinking. Where a large volume of water is required and must be conveyed a great number of feet, we recommend $\frac{3}{4}$ in. four ply. For short distances and through aisles there is nothing better than $\frac{1}{2}$ in. three ply.

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Established, 1890
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Will not puddle if left running all day.
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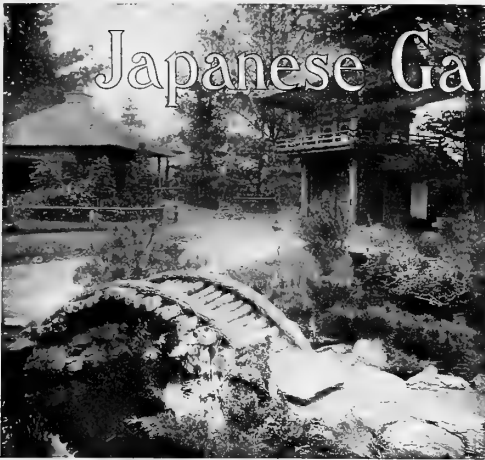
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- Fine shipments just received. Order NOW in time for planting.**
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IV.	Relation of Soils to Water.	XII.	Harrowing and Rolling.
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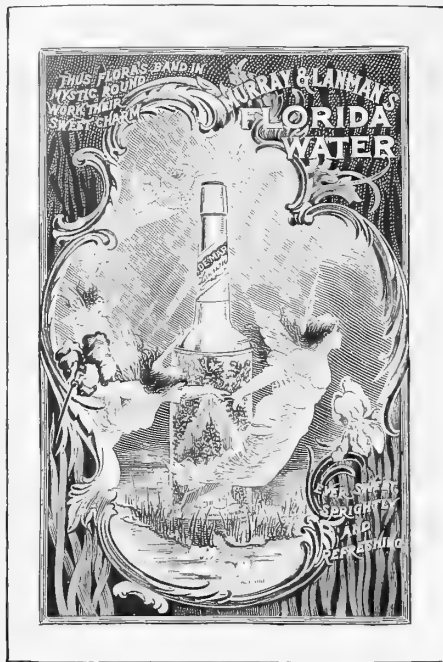
will cut short grass, tall grass and weeds. If your dealers have not them, here is the price. Send draft or money order.

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Clipper Lawn Mower Co.

DIXON, ILL.





mutilate a plant, but there is some chance of saving its life. Cutworms slay outright. It might appear that the can would confine the roots so that they could not obtain enough nourishment; on the contrary, they grow deep and spread out below the can, which also protects them from drought. These cans can be used over again, year after year, if they are stored away after their spring usefulness is ended. Each bottomless can has a little fine gravel or sand put in below it. Powdered charcoal (or the pieces of charcoal that can be purchased from any plumber or tinsmith, and which are easily crushed fine enough with a hammer or hatchet) is the very best thing in the world to add to the drainage layer at the bottom of a pot, can or other receptacle designed to hold the roots of a plant. It will keep the earth sweet and loose. The tin is then filled with finely screened, rich loam in which the seeds are planted. Several seeds are put in each can, and the stockiest seedling retained.

PAPER FLOWER POTS

Flower pots can of course be used, but they are more expensive than the cans, which are generally thrown away as a perfect nuisance. Paper flower pots are decidedly good for this purpose. They are made of a brown, practically water-proof cardboard, cleverly cut and folded in such a way that they may be easily and quickly opened at side and bottom. When the seedling is grown and ready for the garden, the pot is unfolded, the plant released, and the earth, if moist, will retain its shape. These paper pots can be purchased from dealers, in sample lots of one dozen, or in cases of 1,000. They cost from ten to sixty cents a dozen, the sizes ranging from two and one-quarter inches to six inches.

OTHER CHEAP DEVICES

Berry baskets are good nurseries for seedlings, especially the small, square or oblong ones with flaring tops, used for strawberries and raspberries. The spaces between the strips allow good drainage. The baskets, when filled with earth, should be set in a shallow box, so that any rootlets which come through the openings may not be injured.

If you wish to limit expenses as much as possible, there is another receptacle that comes to almost every house and is as promptly thrown away, when emptied of its contents, as the berry baskets are. I mean charlotte-russe cases. The bottom can easily be pressed out, and there is left a pasteboard cylinder, as good as a tin can, though smaller.

Roofing felt could be made to answer the same purpose, and it has this advantage, the cylinders can be made any size desired. A strip of this material, five by ten inches, rolled around and overlapped one inch, tied with heavy string or wire, makes a good size for tomatoes, peppers, eggplants, etc. The old-fashioned way of using up old newspapers in the transplanting of cabbages is not to be forgotten. The plant is wrapped in a piece of paper slightly shorter than itself at each end. This protects the plant at the collar and upsets the plans of the cut worm.

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Copper Sulphate (Blue Vitriol) for the Bordeaux Solution, Sulphur, Brimstone, Nitrate of Soda, Sulphate of Ammonia, Phosphoric Acid, Grafting Wax, Dry Bordeaux Mixture, Paris Green, and Special Preparations for the San José Scale, etc., etc.

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LAWN VASES



are made with an internal reservoir perforated on the top. The earth is filled in, covering the convex reservoir to the bottom of the bowl. The water is filled in through the filling tube, which is afterward corked air tight. The water passes out under the lower edges of the reservoir and comes in contact and moistens the earth all around the outside first, then by capillary attraction works toward the center, keeping all the earth moist all the time. As the water is drawn from the reservoir a vacuum is created which draws the air down through the soil, keeping it loose and fresh. The constant circulation of air through the soil, together with a constant supply of water at the roots, promotes a strong and vigorous growth of plants. Under patent in the U.S. and Canada.

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Flowering Shrubs, 2 to 5 feet, 15 to 50 cts., according to variety.

Trees up to 50 feet high, 30 feet spread of roots and top.

Send for price list of hardy flowers, and catalogue "Trees for Long Island," containing Soil and Climate Chart.

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By ANNA BOTSFORD COMSTOCK

Contents:

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- The Location and the Arrangement of the Apiary
- The Inhabitants of the Hive
- The Industries of the Hive
- The Swarming of Bees
- How to Keep from Keeping too many Bees
- The Hive and How to Handle It
- How to Make Comb-Honey
- How to Produce Extracted Honey
- How to Make Beeswax
- Feeding Bees
- How to Winter Bees
- Rearing and Introducing Queens
- Robbing
- The Enemies and Diseases of Bees
- The Anatomy of Bees
- Honey Plants
- Bee-Keepers and Keeping
- Bee-Hunting
- Bibliography
- Index

This is a charmingly written manual, the first purpose of which is to show the uninitiated what they are missing by not joining the ranks of bee-keepers. The outfit, first steps, and methods are given clearly and in detail; and the author's well-known literary ability has combined with her enthusiasm for the subject to produce a very unusual volume.

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This SHEEP MANURE lightly sprinkled over the lawn Spring and Fall feeds and nourishes the grass roots, producing double the vitality and richness of common foul smelling top dressing, and there is no after raking up.

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hold 100 to 150 feet of line, take small space, and are quickly removed when not in use. Make a neat and tasty appearance, last a life-time.

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If not found at your hardware store, write

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Write for Cat. 39.




Important Work in May

THE blooming of the apples and pears warns us to get ready to spray with an arsenical poison for the codling moth or apple worm, shortly after the blossoms drop. It must be done before the green sepals beneath the white petals have closed up and the young fruit bent over, because the poison must fall into the calyx cup in order to be effective. The slimy disgusting pear slugs begin work shortly after the leaves appear. They can be easily controlled either by an arsenical spray or by dusting with ashes or land-plaster. Pear psyllas and plant lice, which at times are exceedingly destructive, appear with the unfolding of the leaves, and when excessively abundant must be held in check by thorough spraying with a whale-oil soap solution, one pound dissolved in five to seven gallons of water, or a kerosene emulsion, standard formula, diluted to about nine parts of water.

Steely flea beetles injure grapevines by eating the unfolding buds, and later the white hairy plume moth larvæ web together the unfolding leaves. Protect from the flea beetle by painting the buds with a strong arsenical mixture; the plume moth yields to hand picking or an arsenical spray. Currant worms are controlled with either hellebore or poison.

Small, black flea beetles appear during May and can be destroyed by thoroughly spraying with the poisoned Bordeaux mixture, prepared as told in the GARDEN MAGAZINE for April. Dusting with land-plaster or ashes will also give some protection. Cut worms are liable to cause havoc with recently set cabbage and other plants unless a band of paper about three inches wide is rolled around the stem and the plant set so that the lower edge of the paper is below the surface of the soil.

The best method of checking white grubs and cut worms which eat the roots of recently set plants, is to dig out and kill the former and attract the others to poisoned baits such as fresh clover or lettuce dipped in strong Paris green water.

One of the best poisons for general use is the arsenate of lead. This should always be used in the paste form and can be purchased in pound cans. Its particular value consists of its harmlessness to vegetation and superior adhesive properties. It can be applied in almost any quantity without injury to tender foliage. The standard kerosene emulsion may be prepared by dissolving half a pound of soap in one gallon of

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CALDWELL TANK AND TOWER

Because he knows that her fiercest bluster will not prevail against the tower, nor her frostiest glance penetrate to the contents of the tank.

Let us tell you why.



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Healthy trees, shrubs, vegetables, and fruit are possible only when freed from insects by using the

Auto-Spray

the simplest, most economical and improved pressure-spray sprayer. Requires no continuous pumping as do the knapsack sprayers and bucket pump. A few strokes of the plunger impresses on such air to cover a quarter acre of Chelsea plants, flowers, fruits or vegetables. Capacity of 4 gallons. We manufacture the largest line of

HAND AND POWER SPRAYERS

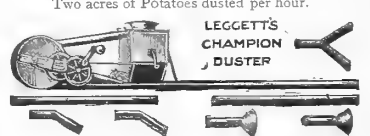
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saving Fruit and Vegetable Crops when other methods fail.
NO BARREL OF WATER TO HAUL
Two acres of Potatoes dusted per hour.



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Several Styles for GARDEN, FIELD or ORCHARD
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And Are The Cheapest To Buy

Price, \$8.50 and upward. Make your labor and investment earn a good profit by destroying the insect pests and plant diseases which cause so much loss. These sprayers may also be used for applying whitewash and cold water paints, spreading disinfectants, cleaning wagons, curing surface diseases on cattle, chickens, and many other purposes. **Sprayers may be returned at our expense if they are found defective.** Send for catalogue.

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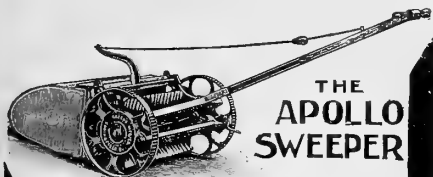
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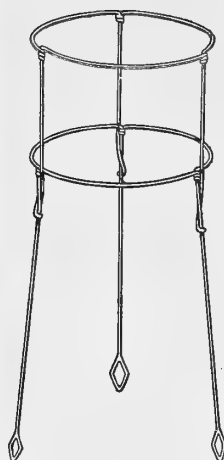
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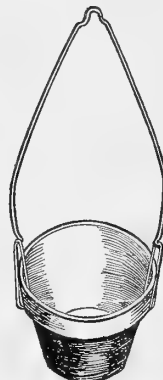
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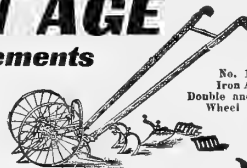
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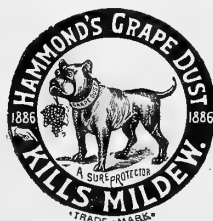
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water, adding two gallons of kerosene and then churning vigorously or passing through a pump till a white, milk-like emulsion is formed, which mixes readily with water, dilute as needed. **E. P. FELT.**

New York State Entomologist.

A New Remedy for Squash Bugs

I WAS bothered almost beyond endurance by the striped and big black brown squash bugs, some three years ago, but have entirely cleared out the big fellows, and can handle the striped ones with ease. Observing that the big bugs come in colonies, each colony covering a small space, especially mornings, I bought a gasoline blow torch of brass, such as electricians use. The flame is so concentrated and so hot that a blast kills instantly. I soon destroyed every colony. The striped fellows came like a swarm of bees when they first returned from their winter quarters. By taking a small pan and dropping it over the hill of vines, I caught them all and as they came from a small crack, which was left open. A few trips for a week to get every swarm that came out gave me a firm stand of plants. By using the pan the plants were not burned in the least. I have also killed bugs in October as they would come on warm afternoons upon green squash left in the field, thus killing them before they went into winter quarters. Sometimes a little tin hood is necessary to keep the gasoline blaze from going out on cool windy days.

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Hot Water for Cabbage Worms

I USED to think that plenty of strong fertilizer and a large piece of cabbage, the only practical method of getting the start of the worm. It never failed when I grew them in quantity for market. But for the home garden, where only a few heads are raised, I felt sure always of nothing except a crop of green, crawling worms. I tried road dust, ice cold water, saltpetre and kerosene emulsion and the worms still ate the cabbages to the stump. Dalmatian insect powder was fatal, however. But the latest and simplest remedy is hot water applied with a garden sprinkler when the cabbages are heading. Have it hot enough—not quite to boiling—to kill the worms when it touches them. You may scald a few leaves, but new ones will grow, so no harm comes to the head.

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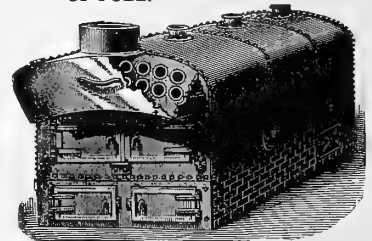
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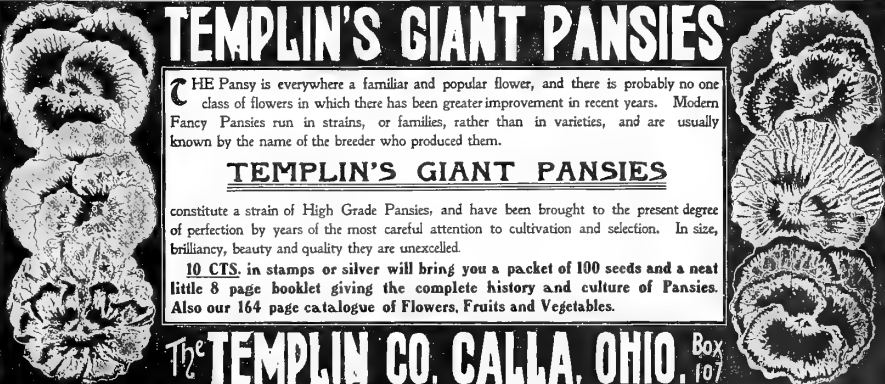
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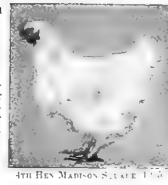
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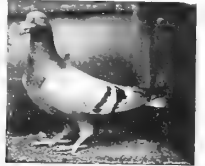
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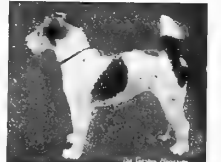
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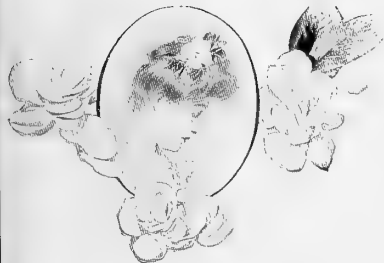
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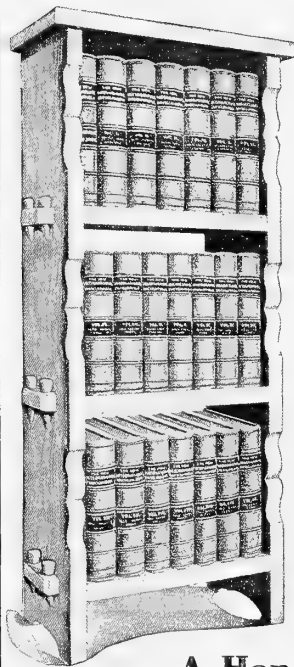
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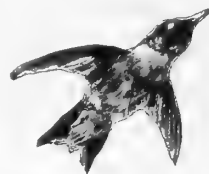
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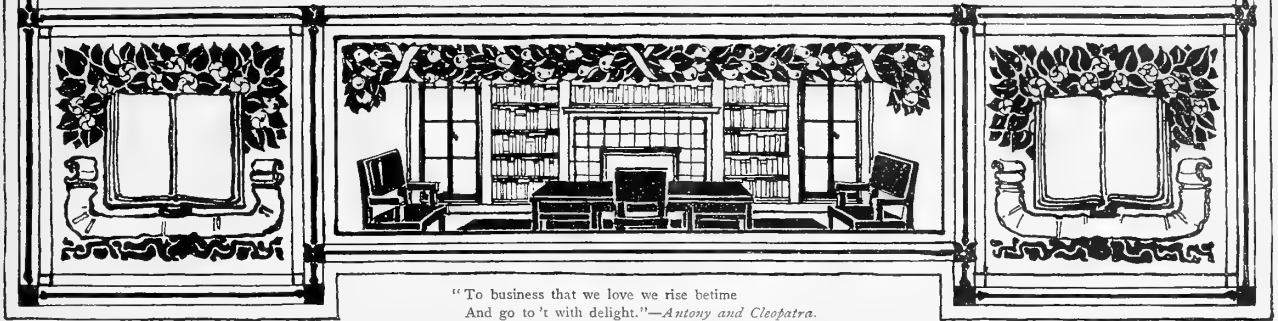
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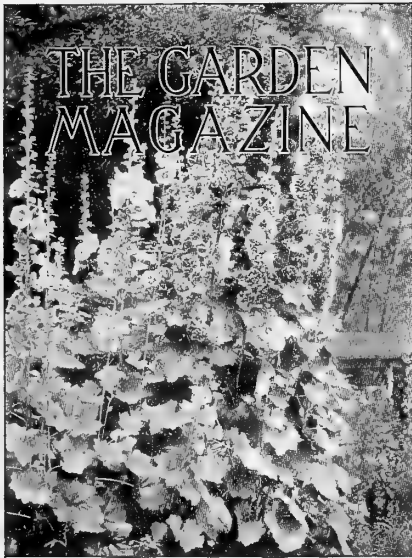
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The Hollyhock cover for July

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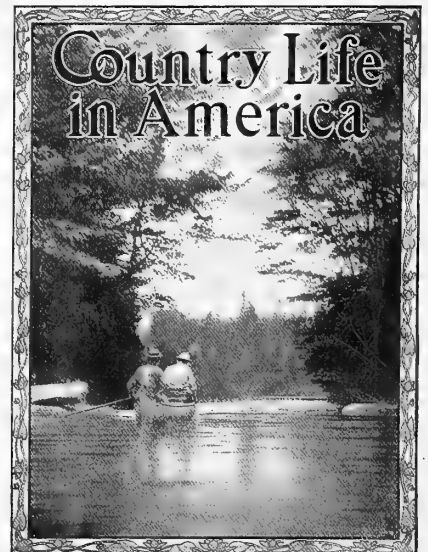
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Cover of the Vacation Number

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June Resolutions

The man writes in his diary: "I promise myself I will pitch into the hard jobs first, and amid all distractions I propose to concentrate on these things:

- "I will have a neater place than ever.
- "I will positively keep ahead of the weeds.
- "I will beat the insects for once.
- "I will master the art of pruning shrubs.
- "I will resolutely thin vegetables and flowers and have the best of everything."

The wife: "And I'll agree to can more strawberries, cherries and some vegetables!"

LAST CALL FOR THESE!

It is not too late to sow in June for the first time the vines—cucumber, pumpkin, squash, muskmelon and watermelon.
 Nor to sow late cabbage and cauliflower.
 Nor to set out plants of tomatoes, egg-plants and peppers.
 Get a hive of bees.

TO MAINTAIN A CONSTANT SUCCESSION

Be sure of these first—

Plant evergreen corn in early June for September use. Toward the end of June plant early and late corn the same day, the latter on a chance for October.

Plant beans every ten days in May and June. Refugee Wax the best for late summer.

Sow lettuce every ten days. The black seeded varieties resist heat best.

Sow beets for winter use.

Less important, but—

Think how good it would be to have a constant succession until frost of beets, carrots, cucumbers and endive!

Endive is the natural hot-weather substitute for lettuce; New Zealand spinach and summer radishes for the common varieties. Sow endive three times in June and once in July; the others once.

THE FRUIT GARDEN

Cultivate trees and bushes and apply wood ashes.

Cut out old and dead wood of bushes, train the rest and pinch out tips of young shoots when two and a half feet high, so that they will make compact bushes next year.

Jar plum and cherry trees in the early morning when the curculios are torpid and let the chickens eat them, or you will have wormy fruit.

Spray all fruit trees and berry bushes once or twice in June with the Bordeaux-arsenate compound—never while trees are in bloom.

If a strawberry plant collapses dig up the hill and kill the white grubs.

Pinch off suckers from fruit and ornamental trees.

Pinch out lateral growths of grapevines to one or two eyes, so that all clusters will have a chance at the light.

If you see gum or sawdust near the base of peach or plum trees dig out the borers, or they will kill your trees.

A "SQUARE DEAL" FOR PERMANENT CROPS

The things that do the most for us we do the least for—especially trees and shrubs. As fast as they flower we ought to prune, cultivate, fertilize and mulch every one. The mulch may save watering them in drought. For example, we ought to cultivate, feed and mulch asparagus, strawberries, roses and lilies-of-the-valley as soon as they have borne their crops for us.

THE FLOWER GARDEN

The big chores are thinning, weeding, cultivating and watering.

May 15th to June 1st plant out bedding plants and fill veranda boxes.

Many people plant dahlias and cannas about June 1st.

June 20 plant some gladiolus in shrubbery for late September flowers.

Plant out house azaleas and rhododendrons. Plunge the pots to the rim in a half-shaded situation and water often.

Take cuttings of chrysanthemums for November bloom indoors.

Lift bedding or April-blooming tulip bulbs and store in cellar to ripen.

When the outdoor rush is done repair greenhouse shelves and benches, clean pipes and boilers, and make all joints tight.

Pick young pods daily and you will have more flowers.



270. Sharpless is often cockscombed and with a white tip which condemns any sort for home use. We want tender, rich red berries



271. Glen Mary is one of the largest popular berries, but is too coarse for beauty or excellence. Has a white tip, too. Grown only where size counts



272. Lady Thompson—very prolific, a popular Southern berry for early crop. Fine form, but light color, medium quality. Not grown in the North

Better Strawberries Than You Can Buy—By James Wood New York

THE BEST VARIETIES FOR HOME USE: THOSE IN WHICH FLAVOR IS EVERYTHING AND SHIPPING QUALITY NOTHING—THE STANDARDS OF MERIT

Photographs by Department of Agriculture, E. H. FAVOR and A. E. HACKETT

STRAWBERRIES for the home garden are measured by a standard of their own; the markets are supplied with strawberries that are suited to market purposes. One of the first considerations for market is



273. Mulch with clean straw or salt hay before the berries form, after the last cultivation. This is a productive plant of the Clyde when fruit is setting

ability to stand transportation. This means a degree of firmness, or perhaps of toughness, that will stand knocking about and will keep the berries from becoming bruised by the jars of rough handling. Growers for market are compelled to select such varieties, and sometimes this consideration is carried so far as to annoy the purchaser, who finds he has bought something with the texture and consistency of a Russet apple or a slightly modified piece of cork.

All these considerations may be ignored in selecting varieties for home use where qual-

ity is the first object: The more delicate the texture the better, if only the berries, when thoroughly ripened through and through, will not crush by careful picking and gentle carriage to the house. Of course, a certain degree of firmness is always necessary, but its importance is reduced to the minimum.

The points to be considered in valuing a home berry are healthfulness and vigor in the plant, beauty of form and color, creaminess of texture, and agreeable flavor. I do not name productiveness because great productiveness is not usually accompanied by high quality. Where the ground in the home garden available for strawberries is very small, it may be advisable to seek a variety that will give a large crop from a small area.

Good form is important, as it is very desirable to have each berry a thing of beauty when placed upon the table. To most eyes a rather long berry with a neck between the hull and shoulder is particularly pleasing. Good color is also important. Some berries, otherwise good, have a dull, dead color that of itself condemns them. The brighter and clearer the color, whether scarlet or crimson, the better. Some of the scarlet berries are white inside. The Kentucky, a very late and handsome berry, is a striking example of this. By most people a berry is preferred that has a bright-red flesh all through.

Most important of all the qualities, however, is the flavor, but for this we can fix upon no uniform standard. Some persons like an acid berry and some want a dead sweet one, while others prefer some peculiar flavor like that of the old French Hautbois or Alpine.

"Every one to his own taste," but, whatever that is, the flavor must be good of its kind. As a rule, a sweet berry with a high flavor is preferred. This means a proper mixture of sweetness and acidity, which is the last analysis of the greatest excellence, whether in fruits or in human character. Fortunately the strawberry season is lengthened by the selection of early, midseason, and late varieties. It is quite easy to make these divisions, but it is very difficult to make a gradation of the varieties constituting each division. A noted grower was asked at a convention whether a particular variety was not earlier than any



274. Always set out young plants. The plant on the left with an old long dark-looking stem and only a short new stem and white roots above is unmistakable. A young plant suitable for setting is shown on the right. It has white roots and a short stem



275. Michel's Early, an old reliable berry, but small. This, and all the other berry portraits, a little less than half natural size



276. Bubach, a midseason reliable berry for a majority of soils, popular for home and market use. A type that is recommended, but not equal to Brandywine



277. Brandywine, the best all-round berry for home use. It gets red before it is ripe, so must not be picked too soon. Delicious flavor; grand color

other. He replied, "Yes, it may be ten minutes earlier."

VARIETIES FOR SPECIAL PURPOSES

Early.—Excelsior, Michel's Early, Johnson's Early, and Climax are among the

earliest varieties, and under the ten-minute schedule they ripen in the order named. The Excelsior is a seedling of the old Wilson's Albany, and has many of the good qualities of its parent, but it has unduly developed its

degree of acidity, and we have discarded it on that account. No one wants to squeal when eating a strawberry. But its color is very fine, and no variety is better for canning, the color of the preserved fruit being superb.



278. Strawberries mulched with straw. It keeps the berries clean, prevents the soil moisture from escaping, and keeps the roots cool. Do not wild berries usually grow in a mulch of grass? This variety—the Haverland—is one of the heaviest bearers. These are evidently "pedigree" plants—having been propagated from the most prolific parents to be found. They may bear a quart to a hill. Why not grow clean strawberries like these instead of eating sand?



279. Different systems of cultivation. Hill culture is the ideal for the home garden if labor is no object. Each plant is grown by itself, one foot apart, in rows three feet apart. No runners allowed to grow, no flowers to set the first year. The most intensive system; produces the best berries; requires the most care

Michel's Early is an old reliable berry, pleasing in color and quality. The berries are rather undersized and the plant is not a heavy yielder. Johnson's Early is an improvement on Michel's. Climax is a newer variety, with vigorous plants and fruit of high quality and beautiful appearance.

of high quality and beautiful color; its foliage is very handsome. Among the later of the midseason sorts is the Brandywine, with an established reputation. The plants are about perfect in character, and are uniformly good bearers in almost every soil. It holds its fruit well from the ground; the ber-



280. The wide matted row, the commonest system, because the easiest. Rows set three to four feet apart; plants eighteen inches apart in the rows. Runners allowed to root at will, within bounds of the row. For best berries thin runners during first season. This is the lazy man's method

Midseason.—The midseason varieties are almost numberless. The Cumberland is valuable. It is very sweet, having so little acidity that invalids, and those who cannot take acid fruit, may eat it with impunity. William Belt is good, with a glossy red color and fine flavor. Nick Ohmer is large in size,

and of fine flavor and good color. If we could have but one variety it would unquestionably be the Brandywine.

Varieties to Avoid.—Among the well-known midseason berries are some which the home gardener had better avoid. The old Sharpless is one of these, being ill shaped,

often cockscombed, and ripens with a white tip which condemns any sort. Another is the much recommended Glen Mary, which is too large in size for beauty or excellence, is ill shaped, and also ripens with a white tip.

Late.—In the late varieties we find the greatest excellence of flavor. In the North, where there happens to be limited space, so that there is not room for many sorts, it is well to purchase the early supply for the family and devote all the energies to the superb later kinds. First among these we place the Marshall. It is the gentleman's berry. It is not so prolific as the Brandywine and some others, but it fully makes up for this in other qualities. The plants are good; the berries are large and well shaped; the color is very dark, and rich, and the same all through the flesh; the consistency is about perfect, and the flavor seems to suit every taste. Every family should grow the Marshall. Upon clay soils the Gandy is very valuable; the plants are fine; it is a good bearer and the color is very bright and pleasing. The flesh is a trifle too firm for a perfect family berry. This variety should not be used the day it is picked. If placed in a room of moderate temperature for twenty-four hours its flavor becomes properly developed and its quality greatly improved. The Rough Rider is a vigorous late sort of real excellence. The berries are a bright glossy red, of good form and good quality. Few of the late varieties have given us more satisfaction than Midnight. It is extra late, extra handsome and extra good. At our family table it is asked for in preference to most others. All the varieties here mentioned have perfect flowers, and therefore are self fertilizing.

We have here named as many varieties as it is advisable for the private grower to consider. All may not do equally well in all situations, but they will be found generally reliable, and afford opportunity for a proper selection of varieties of highest quality.

HOW TO GROW THEM

While some varieties do best on a sandy soil, and others on clay, nearly all of them will succeed upon an ordinary loam, whether light or heavy. Where various soils are at command it is well to plant the different varieties where they will do the best; and as a rule the early varieties will be most satisfactory on sandy soil.

The soil should be rich and the cultivation deep and thorough. The question of manure depends entirely upon the richness of the soil. Where the soil is poor well-rotted manure should be used in sufficient quantities to supply an abundance of plant food. Where artificial manures are used it is well to remember that for the weaker-growing varieties nitrogen should be given, say, in the form of nitrate of soda. But this should not be used for the strong-growing sorts. Potash heightens the color of the fruit, and generally adds to its flavor. Wood ashes is the best means of supplying potash. A light dressing of Peruvian guano is a good general-purpose fertilizer.

For a complete fertilizer for strawberries



281. The narrow matted row is twelve inches across; the wide row is two feet or more. The narrow row offers better opportunity for cultivation, and is better for early crops. The dominant commercial system

nitrogen, phosphoric acid, and potash in the ratio of 3, 7 and 9 per cent. is recommended, or nitrate of soda, 150 pounds, bone meal 550 pounds, wood ashes 1,400 pounds to the acre.

There are two methods of culture—hills and matted rows. Where labor can be freely given the hill culture will give the largest and finest fruit. It consists in placing the plants two feet or more apart, cutting off all the runners, and giving thorough cultivation. As a result of this each plant will enlarge its crown into a great collection of crowns from which fruit stalks in great numbers will be thrown up bearing the highest quality of fruit. Soon after the fruit sets the ground should be thoroughly mulched with litter so as to conserve the moisture of the ground and to keep the fruit clean from grit. There is just one objection to mulching in any system of cultivation. It keeps the ground cool, so that the greatest development of sugar cannot take place. Where the sun shines directly upon the ground more sugar and a higher flavor are produced.

The matted-row system involves less labor than hills, gives a great yield of berries, without the fine development of the hill system. The plants are set two feet apart, with five feet between the rows. The runners are allowed to cover the ground, being assisted in proper distribution by being placed in the vacancies by hand. These plants cover one or two feet in width, the remaining space between the rows being well cultivated. Where plants are set too thickly they are removed with a pointed hoe. The next season before fruiting the ground between the rows should be well mulched with litter.

With either system it is well to cover the plants lightly with stable litter early in winter after the ground becomes frozen. Injury from mold may result if the covering is applied too early. Under any system one crop is all that will prove satisfactory. This involves new planting each year. New plantations may be made from the runners in August and will do excellently. Fall planting is not a success as a general rule, especially



282. Runner plants are lifted from the beds in August for summer planting. Cut the connecting stalk and lift young plant with a hand fork; never let the roots get dry. This crop of runners shows the value of copious and frequent watering. The bed was irrigated every day during the summer

on heavy soils. Spring is the best time to plant, and don't let the plants bear a crop the first year if you want the best possible results from them. Concentrate all the force in the second year and then clear off the bed. A system of renewal planting is often followed

in the home garden, the runners being set between the rows for the new planting and the old plants dug up in the fall. When the time comes to renew again the runners are set into the place where the original plants were growing.



283. Ready to plant. Surplus leaves removed. Roots cut to three or four inches



284. Just right. The crown just above surface of ground, as it was before lifting



285. Set too high. Plant will be heaved out by freezing and thawing in winter



286. Set too low. The crown is buried and likely to rot. Always plant firmly

Some Unusual Vegetables Worth Growing—By E. L. Fullerton Long Island

SOME THINGS WHICH MAY GIVE AN ADDED ZEST TO THE WORK OF THE GARDEN AND MAY VARY THE MONOTONY OF THE AVERAGE MENU—DELICACIES AND DAINTIES WITHIN THE REACH OF ALL

Photographs by H. B. FULLERTON

IT is just as interesting to become acquainted with a Japanese radish as with a new carnation, the only difference being that the pleasure is shared with another sense. Don't slip into a garden rut, and therein contentedly continue to travel. Make at least one new acquaintance each year. By a very modest investment of coin you can secure a package of flower seed, and a package of vegetable seed, in varieties yet untried. As a result of this ten or fifteen

with a mayonnaise, and I should think it could serve just as many purposes as lettuce. The seed resembles that of a radish, so does the seedling, and it needs about the same treatment as cabbage. A very rich soil and a little nitrate of soda after transplanting produce a rapid and tender growth, and give the best heads.

GLOBE ARTICHOKE

The Globe artichoke, a very highly esteemed vegetable in France, has not become

and some salt. Our English cousins, who think a great deal of this peculiar vegetable, recommend for it a winter covering of seaweed placed about the roots to serve two purposes—to afford protection and to furnish salt. Those of us who live near enough to the sea to obtain it will find the use of seaweed both wise and economical; but those who do not should apply salt.

The plants may be started either from seed or from root suckers. If the seed be sown in February in the hotbed, and transplanted to the open in May, there will be globes the first year. When not sown until April or May, and transplanted in June, they have to be wintered over, in order to develop them to the bearing point. Root-stocks or suckers may be set out in April or May, buried fairly deep, and protected from the sun by an inverted pot or box, until the roots become well established. In the fall tie the leaves together, cut off any that are too large, and bank the earth up over the whole plant, being careful to protect the heart in the same manner as when banking celery. When freezing weather comes cover with three or four inches of litter, and on top of this put two inches of coal ashes. In the spring rake off the ashes, remove the litter and spade or fork the ashes in around the plants.



287. The Kales are cabbages that do not head. For best flavor cook after a hard frost. They have a variety of color and form and are useful as a garnish. Very hardy

cents' outlay you have considerably broadened your garden horizon, and what matters it whether you care to continue the acquaintance and grow to be intimate or to part forever after a brief companionship?

THE CHINESE CABBAGE

I must give a few of the experiences with our new acquaintances in the vegetable kingdom for one summer, for we were not so conservative as to make one or two new friends only. The seedlings began to appear, one, two, even four in a day, until there were sixty-four young things I knew nothing whatever about, all demanding attention at once. One of our delightful new acquaintances last summer was pe-tsai, or Chinese cabbage; it is really a lettuce. The seed was planted April 24th, but could have been planted earlier. It took six days to germinate. By the end of May we had good plants for setting out. They were placed ten inches apart, protected from too much sun for one day, and became as strong and sturdy as could be desired. They rapidly grew into heads like Cos lettuce, with a thicker, coarser leaf and fleshy, white midrib. It was crisp and tender; flavored with a fleeting hint of the radish, but entirely lacking in "bite." It was ready to use June 16th, when lettuce is generally scarce. It sends up a stalk with yellow blossoms early in the season, so a second planting should be made if you wish for edible plants in the fall as well as early summer. I prepared it for the table as I would lettuce,

well established in this country. The portion eaten is the fleshy part of the numerous scales which surround the flower head. The plant belongs to the thistle family and has similar thorny, much-divided leaves. The blossom is thistle-purple. As the plants must stand three or four feet apart, it would require quite a number of plants to supply a family with artichokes. The artichoke likes a rich, deep soil with plenty of moisture

CHARDS FROM ARTICHOKE

Chards are made from this plant by cutting off the leaves and stems to within six inches of the ground. When the leaves have grown again to a height of two feet they are bound together, and hay or straw is packed around them to cause them to blanch. This is accomplished in about five weeks, and the chards are then ready to eat, though how to



288. Swiss chard—a variety of beet grown for its leaves, cooked and eaten like asparagus

prepare and eat them seemed a mystery, until a Frenchman told me "just like asparagus." The plant is ruined after it forms a chard, so that new buds must be made for this purpose each year. The globe or bud is cooked by being tied up and dropped into a kettle of boiling salted water.

KALE

Kale is one of the several cousins of the cabbage, cultivated in about the same way. It is a cabbage without a head. The plants are very beautiful, especially those with a purple tinge in the stem and midrib. For cooking the leaves are gathered and placed in a tightly covered kettle to draw the juices out; then boiled until tender, and served with vinegar. The flavor is very much the same as cabbage, though the texture is slightly smoother. It is an excellent vegetable for winter use, and is good to rely upon when everything is frozen. For spring use the seed should be sown in September, one inch deep,

transplanted one foot apart, and protected slightly during the winter. I sowed seeds of Siberian kale toward the end of April, and had plants large enough to be cooked early in July. There are seven or eight varieties of biennial kale offered by the seedsmen, besides sea kale, which is a perennial, though its leaves show deep dejection after the first hard frost. The striped and variegated kind is one raised for its beauty as a garnish only. Out of the one package of seed thus named came four distinct types of plant. Sow the seed in April; when good and sturdy transplant to a permanent residence along the fence, make a path border of them or place them one foot apart in an out-of-the-way corner, where the young leaves may be gathered for a garnish, and will also make a beauty spot throughout the season.

SWISS CHARD AND ORNAMENTAL BEETS

A distinct variety of beet of which the leaves are eaten as a boiled green is called Swiss



290. After boiling, the scales of the globe artichoke are pulled off and the fleshy bases eaten. Worth a place in the garden for its beauty alone

chard, though some people use the leaves of the red table beet in the same way, and both are extremely popular in the country. Sow in early spring. When the plants are well up they may be thinned from time to time and the thinnings boiled in the same manner as kale, or set out in the garden, for they transplant well. The plants left to mature, which they do in the late summer and autumn, should stand about ten inches apart. The leaf is beautiful and broad, pale green, with a thick, white midrib. There is no fleshy root as in the case of other beets.

FENNEL

One interesting thing about these little-known vegetables is their distinctly beautiful appearance; so many of them are equally valuable for ornamental purposes that it may count in part for their not being so often grown for cooking. The fennel has very finely cut foliage, which makes it useful for combining with flowers for indoor decoration. They remind one of the cosmos. The flavor is very pungent, it is used as an herb rather than a vegetable, and is worth an odd corner in the garden. The list of little-known herbs might be extended enormously, but that is quite another story.

CARDOON

Cardoon is handsome and luxuriant, and is one of the most beautiful plants in our garden. I can discover little about its culinary purposes. The seed catalogue directs to bind the leaves, blanch the stalks, cut out the midrib, and serve as a salad. But alone it is extremely bitter, a pleasing bitter, and a splendid appetizer, but not suited to the average American taste, though a little of it makes a good addition to another salad, such as lettuce and celery or lettuce and tomatoes. It can be cooked and served like asparagus. One seedsman says: Sow the seed in the early spring, thin to one foot, and blanch when full grown. Another says: Sow in April one inch deep, and when one year old transplant into trenches of well-manured ground, three feet apart, setting the plants one foot apart. The roots remain from year to year. I have had great success with ours. Both methods of culture were tried and transplanting gave by far the better



289. Pe-tsai, a Japanese visitor, which is an excellent substitute for lettuce in the hot weather. Crisp, tender, with a fleeting sense of radish flavor, but no bite. Flowering plant to left, matured head to right



291. Cardoon is handsome enough for the shrubbery. The long leaf stalks are blanched and used for salads like celery in winter. Grows three feet high. Comes from Spain. A perennial herb

results. The leaves measure three feet by twenty-three inches, and are markedly serrated, very slightly spiny, and of the softest silvery green.

A WONDERFUL JAPANESE RADISH

Nothing gave us such real satisfaction as this visitor from Japan. Picture to yourself a pure white radish the size of a baseball or larger, firm and solid. Cut it, and you find it has the consistency of a Baldwin apple, firm and fine of grain; taste, and it proves to be away ahead of the most delicate spring radish that ever passed your lips. It will thrive at any season during the growing year; it may be transplanted or left alone; cul-

tivated or uncultivated; it is as good to eat when in bloom as in its younger days; and one radish will provide bulk enough for three or four people. Need I say more?

To begin with, the seed catalogue contradicted itself flatly when it said "Raise as the ordinary radish," and in the next breath, "They weigh, when ripe, thirty pounds each." Any one knows you could not raise a mammoth thirty-pound radish in the same space required for a dainty little French breakfast one.

As usual, we took chances, banking on the old reliable mainstay, common sense, and so the seeds were sown April 21st one-half an inch deep, and the leaves appeared above the



292. The best new acquaintance was the Japanese radish Sakurajima, grown just like an ordinary radish. Two roots sufficed for a family of eight. It endures hot weather. May weigh a pound

surface in seven days. I suppose it knew that it had to hurry to collect all that catalogued weight in one summer. In three days I thinned them to two inches, leaving the finest plants. A second sowing gave excellent roots on October 30th, two being enough for a family of eight.

SCOLYMUS

This is the "golden thistle." It grows two and one-half feet high, and has as spiny a top as one could well imagine. It is used in the same way as salsify or scorzonera, but to my taste is not so good. The seed is sown in April in well-dried soil, and the roots are ready for use in September or October, when they may be stored for use during the winter. These roots are a foot long, branched and massive, and measure an inch in diameter.

UDO, A NEW SALAD

Among the rare salads is udo, of which there are two varieties, Kan and Mayashi,



293. Scolymus, or Spanish golden thistle, a substitute for scorzonera. Has a root a foot long and one inch across. The top is spiny and can't be handled

the latter being a forced variety. The seed of Kan udo is sown broadcast in seed beds in March or April, and the following year the seedlings are taken up and set in rows, two feet apart and ten inches from plant to plant. When the leaves begin to turn brown in September, they are all cut off, and earth is piled to the depth of two feet over the roots. In about forty days, shoots will appear at the top of the mound, and these are cut close to the root just as you would cut asparagus. A second crop of shoots then comes up, and sometimes a third. In spring this is levelled off and a dressing of manure is applied. In September the leaves are again cut down. In this way the roots last ten years. The stalks are served like celery salad.

Moyashi is grown from root cuttings. Cultivated well all summer, they are ready to take up in October, when all the dry stems should be removed, and the plants put away in straw until wanted for use.



294. Pruning a neglected *Spiraea Van Houttei*. The old wood was not cut out after flowering, as the feathery effect in summer and winter was wanted



295. Thin slender lower growths after removing old wood; cut back slightly all shoots left. This lessens quantity of bloom but improves quality



296. All the old wood cut away, nothing but the new growth left. Next year most of the wood now in picture will be removed



297. More than half the plant was cut out. Some small shoots of flowering wood were sacrificed, but on those left there will be better flowers

Prune Your Own Shrubs—By Leonard Barron New York

PRUNE EVERY SHRUB AS SOON AS IT IS THROUGH FLOWERING—WHY EVERY ONE SHOULD UNDERSTAND THIS SUBJECT—THOUSANDS OF BEAUTIFUL BUSHES RUINED BY IGNORANT LABORERS WHO CALL THEMSELVES "EXPERTS"

Photographs by HENRY TROTH

THE flowering shrubs which have already bloomed should be pruned now. Most people who spoil the flowering shrubs, do so because they prune them at the wrong time of the year. The expert gardener who really knows what he wants, and how to attain it, can prune at any time of the year, but for the inexperienced amateur it is wise

secondly, to keep them within bounds; thirdly, to insure an abundance of bloom next year. These three objects can be attained at the same time, but generally the third feature is sacrificed to the other two. The broad principle to observe is to remove all branches which have flowered. This causes other buds to push out and new wood is made for the next crop of flowers. All dead wood or overcrowded branches will of course be removed in the ordinary course of events.

All the common or popular spring-blooming shrubs flower from buds made on the shoots of the previous year they have the

flowering is done, room is made for a full growth of the new shoot which will flower next season. These shoots are strengthened by this exposure to plenty of light and air, and are in every way better. Moreover, the amateur can see just what he is doing.

The expert horticulturist who can tell the old wood from the new, will prune in winter or early spring, and be quite successful, and he will get a more profuse blooming.

PRUNING FOR BLOOM

There is no great difficulty about the pruning of flowering shrubs so as to have the greatest show of bloom next year. The reason why some flowering shrubs fail to produce flowers in profusion is, that they are all cut off by the well meaning but unintelligent way in which the average man cuts into



298. Always bend down as far as is safe and convenient any good-sized shoot or branch that is to be cut through. Place the cutting edge on the upper or outside curve. The natural spring of the wood to regain its normal position helps the knife wonderfully

to follow this safe rule—*prune after flowering*. This is stating the idea in the shortest terms, and in practice is the same as the rule commonly given, viz., to prune spring-flowering shrubs in the early summer, and the late flowering kinds, like the hydrangea, in the winter.

Pruning is done for these definite objects: first, to keep the bushes in proper shape;



299. Pruning *Hydrangea paniculata* for the largest show of bloom. As it flowers in the fall, prune in winter or spring before growth starts. Cut back severely for abundance of bloom

buds all ready to develop as soon as there is sufficient warmth. By pruning as soon as



300. Pruning a deutzia. The "stool" after pruning. Only strong new wood left. In this style of pruning a few stubs may be left. The extra trouble of getting lower is not repaid in practical results



301. Beginning to prune a *Deutzia crenata*. The strongest last year's flowering shoots are first attacked. Put the shears low down as possible



302. Having cut out the old wood on one side of the shrub, finish by trimming back the long straggling ends of the remaining shoots



303. Pruning back the last straggling end. See what is cut out! The bungling pruner fails because he simply shears back everything

them. Thousands of shrubs all over the country have all the flowering shoots cut from them by the "trimming up" they get in the spring from the unskilled jobbing gardener, or from the owner of a small garden where no skilled labor is employed. If you don't know how to prune the shrubs yourself, or cannot get time to do it—which of course you can if you want to—don't above all things turn the shrub over to the tender mercies of the ordinary hired man. He simply does not know how and goes ahead severely cutting back without any idea of how the shrub will develop later.

When you do prune the shrubs, cut out the old limbs down at the ground line; a short stub, which would be entirely wrong in the pruning of a tree, may be left in the case of flowering shrubs, as there is no objection to leaving some stubs at the base, and it is often very difficult to get at them with the pruning tool without injury to the other shoots.

PRUNING FOR FORM

The pruning for shape and general condition of the shrub is governed by the necessities of each situation. In open spaces it is best to give the plants free scope to grow,

and the pruning for flowers alone will suffice, except so far as may be necessary to remove any damaged branches, or any that will interfere with the proper growth of others.

Shortening of flowering branches must be done in the most delicate manner. Remove only a few inches from the top of the longest, and that only as is really necessary to keep the shrub within bounds. This detail is best attended to during the winter or spring when the actual wants can be fully appreciated and no error is likely to be made. Summer pinching of the shoots as they grow helps greatly in ripening up the wood for



304. *Rosa rugosa* is pruned by thinning out crowded shoots and shortening the rest a few inches at the top. The strongest growths are retained



305. After the thinning shorten back all others, leaving them long or short, depending on whether you want quantity or quality



306. The finished *rugosa* rose bed; plenty of room for next season's growth. Only strong wood is left. This will make a shapely bush

the winter. Summer pinching in wet seasons is a great help as the growths get properly ripened, and there is no injury from frosts in the late fall. Shrubs that are grown for the beauty of their fruits in the fall do better if summer pinching has been done.

The pictures show how Mr. H. J. Koehler, forester of the Essex County, N. J., park system, prunes a deutzia, a spiræa and a rugosa rose, three common types of shrubs, for the greatest amount of bloom. The work in these cases was done in the late winter, because there were no leaves to hide the details, and better pictures could be made to show just how to do it; but the pruning of the deutzia and of the spiræa could have been done last summer or after the plant had flowered. The rose flowers all the

summer so its pruning must be left till winter—again, after flowering. All the old wood is cut out and the tips of the longer growth cut back a few inches.

In all work of this nature, the aim in view must be remembered. If you want flowers, cut out the old wood that has served its purpose in that respect—don't merely shorten it—but cut it as close to the ground as it is possible to get. You will sacrifice a few scattering flower buds, perhaps; but the general appearance will be far better.

WHAT TOOLS TO USE

For all ordinary pruning, a pair of spring shears will be found the most convenient tool. It holds the branch and can be used in confined space where the regular pruning

knife could be handled with difficulty, and there is the probability of the knife slipping and cutting through a branch that should be retained, and in inexperienced hands is quite apt to inflict a wound upon the user. For the more vigorous old shoots, a saw is often a convenience, although shears can be put through any shoot that an ordinary shrub is likely to develop. If you do use a saw, don't under any circumstances use one with teeth on both edges, it will do more damage than the pruning knife. Bend over the branch to be cut, bend it down as far as convenient, put the cutting edge of the shears on the upper side and then use the natural spring of the branch to help the knife through. It is surprising how large a branch can be cut in this manner with either shears or a knife.

The Summer Care of Palms—By W. E. Pendleton New York

A NOVEL AND EASY WAY OF GROWING HOUSE-PLANTS OUTDOORS DURING THE HOT SEASON—HOW TO PREVENT THE BURNING OF PALM FOLIAGE IN JUNE

MOST people who have a few palms that have been growing indoors all winter put them outdoors, exposed to full sunshine, as soon as summer arrives. The result is that the leaves are blistered. The plants are tender at that time and must be gradually acclimated to the different conditions of sunlight, moisture, and air. A thoroughly satisfactory way of handling the plants and an easy one, too, is by means of the slat house. It is better than the veranda, because it does

away with watering and because the shade of the veranda is not as good as the shifting sunlight which comes through the laths.

This consists merely of a stout wood frame covered with laths about one inch apart and furnished with a rolled blind or screen on one side. The plants are plunged into the earth to the brims of the pots, thus securing an even and constant supply of moisture throughout a season with a normal amount of rain. Daily syringing, however, is still

necessary in order to keep down the red spider. Grown on it this way the palms will improve in general condition. They will be hardier, and if kept under this sort of cover all the summer, will be better than ever for house decoration by the next winter. A shed which will accommodate a goodly number of plants can be built for two or three dollars, including labor, as nothing is necessary except four posts and some slats, which cost forty cents a bundle.



307. Palms, rubbers, dracaenas, and other foliage plants that have been indoors all winter must not be put outdoors in full sunshine during summer. If plunged in the ground and covered by an open lath frame and syringed daily for red spider they will be stronger by fall. A slat house like this would cost about two dollars



308. A porch box with vines connects the house with the garden. The Virginia creeper (*Ampelopsis quinquefolia*) overruns both porch and window box. The plants used in this box, *Asparagus Sprengeri*, Boston fern and tuberous begonias are among the best for a north exposure



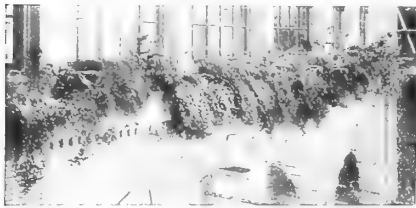
309. A prize porch decoration. *Coleus*, *Vinca major*, geraniums, *Asparagus Sprengeri* and Boston fern are in the boxes. The tall plant in the basket is *Dracaena indivisa*. *Aspidistra*, on the steps, is the toughest of all house plants; seems to stand anything but hard frost

Unconventional Veranda and Window Boxes—By Daniel V. Casey Dayton, Ohio

SOMETHING BETTER THAN THE STEREOTYPED LOT OF STUFF MOST PEOPLE BUY FROM THE LOCAL FLORIST—WHY THE EFFECTIVENESS OF THIS FORM OF GARDENING IS OUT OF ALL PROPORTION TO THE COST

Photographs by the National Cash Register Company

I HOPE the time will come when every house in America will have a veranda or window box of foliage or flowers. Nearly every house in Dayton has one. This form of gardening is about the only thing that can be done to redeem the ugliness of a big city. Its effectiveness is out of all proportion to its cost. There is no other simple, little thing



310. Boston ferns, umbrella plants, lantias, arecas, Sprenger's asparagus, with coboeas, and *Grevillea robusta* for flower. A varied assortment

that will give such a touch of distinction, elegance or cheer to a house. The reason for this is rather subtle. A bit of green about the house makes the connection between nature and art. Even when a house has vines upon it and shrubs in touch with its walls, which make the transition between lawn and architecture, veranda and window boxes are desirable. They give the finishing touch.

In a modest way, too, these things are useful. They may be an effectual screen for the inmates of a room by cutting off the view from the outside while not materially obstructing the interior view. The plants may also break the rays of direct sunshine in the hottest weather, and this helps to keep the room cooler. The evaporation of water from the boxes themselves helps in the same way.

Most people forget about their window

boxes until May or June and then buy their plants from the local florists for ten cents each, and the dimes count up fast. This is why most of the window boxes that you see are conventional affairs, containing only a few common plants that everyone knows. Nearly all the accompanying pictures show some originality and imagination. And by exercising a little ingenuity it is possible to reduce the expense to nothing. Instead of throwing away the plants at the end of the season you can store some of them in the cellar for the winter. Others can be grown from seed. Ferns may be transferred from the woods and plants from the garden. Uncommon kinds can be ordered from the catalogues of large dealers in plants.

TWO ORIGINAL PLANS

An unconventional scheme which has found much favor in Dayton is shown in Fig. 312. We think that every window box should have a trellis to carry the vines planted in it up either side and over the arch of the window opening. If the window is on the ground floor, make the trellis substantial. Hardy climbers among the vines, such as the ampelopsis, clematis, and the honeysuckle, may be trained over it. On upper story windows the trellis may be of a lighter character, ranging down even to a couple of stout cords fastened to long nails driven into the window casement. Over these train morning glories or *Cobrea scandens*. The vines should be planted at either end of the box, of course, and the drooping varieties at the outside edge.

Most people look upon their window boxes as mere summer ornaments, whereas they can easily be used for tulips, hyacinths, and other bulbs in the spring before the regular

season of the bedding plants arrives. For this purpose the boxes can be prepared and planted in the fall, and, if not wanted in the windows all winter, may be stored in a cool cellar and brought into position in the window about the end of April.

MAKING THE BOXES

The simpler and less obtrusive a box the better. A plain wooden box, painted a dull dark green is infinitely superior to one made with all sorts of fancy frills or rails and decorated in all the colors of the rainbow. Let the color come only from the plants which you put into the boxes. Permanent boxes are sometimes covered with tin which is decoratively figured on the outside in imitation of tiling—a style which is suited only to ornate architecture. Often the front of the box is finished in natural wood to match the rest of the house. This may be done in shingle, for instance. If the windows are to be fitted with boxes for more than one season it will be cheaper in the long run to have them strongly made of well seasoned lumber and



311. Cannas and *Asparagus Sprengeri* in a ten-foot factory window. A large, but simple window box

strengthened by iron braces. Good ash, elm, or oak bark make a suitable covering.

Boxes of pottery, if they can be had, will be found the very best of all, because they do not leak at the corners and decay, but they are expensive and rather heavy.

Window boxes should be strongly made, because they have to support a heavy weight of soil. They should be of inch boards fitted together as carefully as the skill of the gardener allows, or better still, made by a carpenter, otherwise the sides will warp and allow the water to run through too freely, eventually washing out and exhausting the soil. Drainage is to be supplied by holes bored in the bottom of the box, six inches apart, and covered with pieces of broken flower pots, charcoal, or bits of broken stone to provide passage for the water, and yet



312. A window framed in green by the aid of trellises and a window box. Marguerites, *Vinca major*, and geraniums, with coboea on the trellis. The front of the box is finished in natural bark

keep the soil from wearing out—in exactly the same way as pots are “crooked.”

The best window boxes should be the full length of the window casing outside with a minimum depth and width of one foot. If these divisions must, for the sake of economy, be reduced to six inches wide and nine inches deep, the growth of the plants will not be so luxuriant. The more soil there is, the less liable are the plants to become dried out in the hottest summer days. If the window sill is not wide enough to support a foot-wide box, provide brackets to carry the necessary extra width.

THE SOIL AND MANAGEMENT

Give the plants good soil to grow in. The ideal mixture for flowering plants and vines is one-third regular garden soil (or soil found directly under the sod in a fertile pasture), one-third compost or well-rotted manure, and one-third sand. If it cannot be had, use

the richest garden soil you can secure and mix half as much sand with it. For foliage plants, such as ferns, begonias, and caladiums, omit the compost or manure, and use instead well-rotted leaf mold. Planting is done as in beds, the soil having been first of all made firm in the boxes. During the heat of the summer months, after the plants in the boxes have been growing long enough to have a net of roots, the application of a weak liquid fertilizer—manure-water the color of weak tea—will help to keep the flowers and vines in a thriving condition. Bone meal, scattered lightly over the surface of the soil, may be used instead, or chemical fertilizer in strength of one ounce to five gallons of water once in three weeks.

Window boxes exposed to the action of sun and wind on all sides require a great deal of water during the summer, especially if they are on southern exposures. They should be thoroughly watered every day. If the drainage has been properly provided for, there will be no danger of the soil turning sour. In the heat of summer, too, the earth may shrink away from the sides of the box, thus leaving a channel of escape to the water, without properly soaking the soil. If the surface, however, is kept open, and the centre of the box kept a little lower than the sides, this danger will be avoided, and it is not likely to occur if attention to water is persistently given and the box never allowed to dry out.

Don't crowd the plants. If your box has a surface area of four square feet, for instance, about the right proportion would be five erect plants, such as geraniums, and three vines. The wider you make your box the more plants you will be able to grow.

The growth and beauty of your plants will be greatly stimulated by keeping the window above the box open as much as possible. If the sun beats down on the plants in a south or west window box, and is in turn reflected by the glass of the windows, it will create a condition trying even for tropical plants, and for most plants such a condition would mean almost certain death. If the wind is allowed to sweep over them, they will stand any reasonable amount of heat and moisture.

SELECTING THE PLANTS

In choosing the plants we ought to consider the color of the house and not get a boxful of magenta flowers that shriek at our peagreen walls. Another principle is to avoid the use of too many colors in such a limited space. For example, if you like geraniums and vines, use only one variety of geranium. If more than one color is used in a box it is important to have a number of white-flowered plants, as white flowers and green foliage are Nature's peacemakers. Flowering plants should be where the sun will shine upon them each day for a good many hours; foliage plants, ferns, and the vines that love shade, on all windows fronting the north and on most of those facing the east.

There is no point in describing the materials, because “descriptions don't describe” and it is far better to see the flowers at the local florist's or study the pictures on the window-garden page of the leading catalogues.



313. The awning is rolled back most of the time so that sun-loving plants can be flowered there. Later the cannas in the jardiniere will be a blaze of red

For boxes exposed to the sun all the varieties of geranium—scarlet, cardinal, salmon-pink and white—are good. The blue heliotrope and the dwarf ageratum, the white snapdragon, the white *Maurandia* vine and the various verbenas, may be used in combination with the geraniums or without them.

On the north side of the house Dayton uses large quantities of trailing fuchsias, ivy geraniums, Japanese morning glories, fancy caladiums, trailing vincas, and begonias. No better or more beautiful foliage plant for northern exposures can be found than *Asparagus Sprengeri*.

Boston ferns, *Russelia*, and many of the foliage plants may also be used in boxes looking toward the east. Omit geraniums and use nasturtiums or *Thunbergias* in combination with snapdragons, *Maurandia*, heliotropes, wild cucumber and *Manettia* vines.

For south or west window boxes no plant is more satisfactory than the S. N. Nutt geranium, with its rich vermilion blossoms, or the Bruant with its vivid scarlet blooms. Purple ageratum and heliotrope are also favorites. Among the most satisfactory white flowers in Dayton's experience are snapdragons, petunia, and Drummond phlox.



314. On a northern exposure, but in full light, umbrella plant, centaurea, geraniums, vinca, and asparagus thrive

Gardening by Proxy—By Gertrude L. Whitlock Long Island

THE ONLY WAY TO GET THE MOST OUT OF A HIRED MAN—FRESH VEGETABLES FOR A FAMILY OF TEN, \$58 IN THE BANK, A WELL-STORED CELLAR AND PLENTY OF CANNED THINGS FOR THE WINTER

Photographs by the author

EVERY year we plant a garden—that is to say we buy the seed, turn it and the responsibility over to a hiring, and then marvel at the outlay necessary to produce a peck of peas. By such a system it costs as



315. When winter comes the still green tomatoes are stored on the cellar shelves and last till Christmas. Unripe peppers are strung up to ripen in the sun. The carrots must be buried in pits in the ground

much to raise potatoes as to mine for nuggets of gold, and we are always surfeited with a superabundance of the crops for which we have no particular liking and tantalized by entrée portions of those we especially desired.

Last year we did differently, for I guided the plow and wielded the hoe—by proxy, it must be confessed, for I am but a small

woman, but I contributed the head and heart. I took the responsibility and was well satisfied with the results.

The change was unwittingly brought about by the green-grocer who asked if we had a garden and if we “happened” to have any extra cabbages. We did have a number of good plump cabbages and I gladly parted with a dozen in exchange for a crisp dollar bill.

I bought a box of seed for \$2.50. By taking a box I saved 40 per cent. Aside from this I spent \$1.15 for extra seed—cauliflower, corn, melons and peas—a total of \$3.65; less than our usual outlay, which always exceeds \$5.00. Long before the first robin peeped I was primed to begin and had the garden all planted—on paper—in long straight rows running due north and south. The little tomato, pepper and eggplants were growing briskly in sunny windows and the garden tools had received a thorough overhauling.

The first day of April found us planting and by the middle of the month we had more seed sprouting than ever before. “Proxy” being possessed by a planting demon, we put in all the seed contained in the box, all the extra supply and some half-dozen packets sent by interested friends, his main inquiry in the early spring mornings being “What shall I plant to-day?” It required

skilful manœuvring to prevent him from putting all the seed under ground at one and the same time.

There were 100 rows in the garden, each seventy feet long, twenty-two of which were



317. I did my canning outdoors, a few quarts a day. It is the pleasantest way

occupied by the potato patch, thirteen by corn, fourteen by peas, four by beans, seven by onions and the rest by the other things! There were 225 tomato plants (all securely tied to stakes) and a row of seed from Japan that must have gone back where it came from for it never appeared, in leaf or flower, on this side of the globe.

We planted no more than we usually plant, but planted it carefully, took the best care of the young plants as they appeared, watered when necessary, and when I made my first entry, “15 heads of Lettuce—.60” in the little book marked “Garden Receipts for the Season of 1904” I felt proud and haughty as I jingled the coins noisily.

After the onions had grown four or five inches high we thinned them, as usual, only this time we removed them with care and instead of throwing the little spindling wisps away we transplanted them, and behold! at the end of the season three bushels of extra good bulbs much larger than those left in the original rows.

Our second crop of string beans was self-planting, a most surprising way to grow them! After the first crop had become too old for use they were left, for want of time to remove them, until those remaining on the vines were thoroughly dried, so that when we did finally pull them out the dry beans were scattered over the ground and some were raked under when the ground was prepared for the next crop, which never was planted as the ground was covered with little new bean plants when we were ready to put it in. The latter part of October we were enjoying crisp string beans from these same little plants.

On August 5th we put in a row of an early variety of corn in direct opposition to the advice of a seasoned old farmer, and were reaping the harvest well on into November.

The family consists of seven, and a constant succession of guests brings the average



316. Brussels sprouts never have their full flavor until touched by frost. An excellent vegetable for late fall use. More delicate flavor than late cabbage, and can be planted closer. Should be transplanted in June. Hang the plants head down in the cellar in November and you can have fresh Brussels sprouts for Christmas

up to ten. We had plenty for all from May to October, and a cellar well stored for winter. In all this time hardly a meal has been served without some representative from the garden, frequently indeed six or seven at one time. Every day after taking the best of everything for family use, I gathered what was left, that which hitherto has gone absolutely to waste, and sold it to the greengrocer. He was eager to buy almost anything, for I saw to it personally that not an



318. Always plant early corn for the latest crop. This corn planted on August 5th gave sweet corn well into November. Plant corn twice in June

imperfect vegetable was sent. He even sent to the very door for what I had.

WHAT I SOLD

The following is a list of things sold:

39 lettuce	\$1.40
15 squash .....	.50
116 cabbage	3.25
448 ears of corn.....	4.95
2 1/2 bushels string beans	2.50
1 bushel carrots .....	.80
1 bushel peppers .....	.50
1 peck lima beans .....	.35
8 bushels tomatoes	6.65
parsley	2.55
	<hr/> \$23.45

WHAT WE CANNED

What we could neither eat, sell nor give away I jarred or dried for winter use. Thirty-four quarts of tomatoes, 4 quarts of string beans, 6 quarts of green tomato pickle, 3 quarts of cucumber pickle, 17 quarts of chopped vegetable pickle, 4 quarts of catsup, 3 quarts of dried beans, 6 quarts of preserved watermelon rind—77 quarts of canned or preserved goods, as well as 100 ears dried corn and 1 big bunch dried parsley.

FRESH VEGETABLES FOR WINTER

Besides all the above there was the winter supply (some stored in the cellar, some packed in sand, some buried): Two hundred and ten feet of celery, 100 feet parsnips, 70 feet salsify, 25 cabbages, 50 Brussels sprouts, 15 squash, 14 barrels potatoes, 4 bushels onions, 1 bushel carrots, 2 bushels beets, 2 bushels peppers to be disposed of, 1 bushel of green tomatoes—a fair return from a \$3.60 investment!

The tomatoes were laid upon the cellar shelves, between layers of straw, and supplied us with salads from the time the outdoor crops ceased up to Christmas time.

Not more than two bushels of the entire yield of the garden went to waste. The only failure to record was with the eggplants. They just suited the palate of the potato bugs and that was the last of them.

If I had had ten times as much corn I could have sold it all. The Brussels sprouts did superbly, plants three and four feet tall laden with their little green rosettes. These were brought indoors after the first good frost, being pulled up by the roots and hung head down in the cellar. Thus treated they keep fresh for months. Pepper plants we treat in the same way. The \$2.55 worth of parsley was all cut from a row but twenty feet long.

Early in the spring when one longs for a taste of fresh vegetation we dig the parsnips and salsify.

In addition, too, I had the surplus apples and pears gathered, and disposed of them for \$7.70; made fifty quarts of grape juice—without a drop of water in it, and could sell every bottle of it if I chose. I have one hundred quarts of canned fruits and eighty glasses of jelly—all from the home garden. Besides all this I sold \$25.00 worth of flowers from hardy shrubs—but that is another story. The grand total of all the receipts was \$58.15.

CANNING IN THE OPEN AIR

I do my canning on the progressive plan, a little every day, so the labor is hardly noticed. This way is possible for us who live in the country who have fruit or vegetables on our grounds and gardens at our back doors. Our town sisters are oftentimes obliged to spend whole days for they must take their fruits when they can find them in the markets.

Do every bit of work possible out in the open air. To this end have a corner of the porch screened off—a protection against flies and other insects—and select a corner that commands a pleasant view, for it is here that many hours will be spent. I believe in making one's surroundings for work even more attractive than for one's hours of relaxation—if a choice is necessary.

Furnish this little corner with a table, pos-

sessing two deep drawers, two or three comfortable chairs, a water pail, basin and dipper, and a covered pail for refuse. Into the table drawers put a plentiful supply of aprons and coarse towels, a roll of cheese-cloth—to use for covering fruits and vegetables that are to be sun-cured, a number of earthen or agate bowls of various sizes, and small, sharp knives. If one wishes to be a bit more comfortable one might add a rug or two



320. Don't you want a supply of fresh vegetables like this from your own garden? Fresher and sweeter and cheaper than you can buy

and a footstool. This, weather permitting, is an ideal spot where every bit of preparatory work can be done out of sight and sound of the kitchen. While I aim to do but two quarts a day, conditions will sometimes be so favorable that I will do six or eight, never more, and sometimes but one. However, if one did an average of two quarts a day twenty days out of each month of the six that can be made to cover the canning season, one would have two hundred and forty quarts to grace one's store-room shelves and no unpleasant memories of days of drudgery.

Here let me make a suggestion regarding the screwing on of the covers. I find that when both jar and cover are piping hot and the rubbers warm and pliable, one vigorous screwing down is all-sufficient, the rubber becomes welded to both jar and cover, and the second screwing is apt to break this connection.



319. Onions and celery do best when transplanted. The large bulbs in the centre measured three and one-half inches in diameter; they were transplanted from the rows which produced the smaller ones

Seven Weeks of Lilac Bloom—By John Dunbar New York

THE NEW VARIETIES THAT HAVE BIGGER CLUSTERS, MORE OF THEM AND LARGER INDIVIDUAL FLOWERS—WHY THEY MUST BE GRAFTED AND HOW TO AVOID THE SUCKER NUISANCE—SPECIES THAT WILL EXTEND THE SEASON TO SEVEN WEEKS—THE VAST IMPROVEMENT THAT YEARLY PRUNING MAKES

Photographs by WEBSTER & ALBEE, and by G. W. KELLOGG

EVEN when neglected the lilac is a picturesque and attractive bush. If pruned intelligently, it is the showiest of all spring flowering shrubs. It is absolutely hardy, makes a handsome bush when not in flower, bears its huge clusters gracefully and the flowers are deliciously fragrant.

It never becomes vulgarized by mere abundance. It is not particular or capricious about soil. It seems to do remarkably well in light, well-drained soil and equally well in a heavy one. The most vigorous and healthy lilacs I have seen are around Toronto and vicinity, where the soil is a heavy stiff clay. As a screen plant, in a place where it can sucker freely it is one of the best. How often do we see it overtopping the chicken-house or filling in some odd corner which otherwise would look untidy or obtrusive.

PRUNING IN AND OUT OF BLOOM

The lilac needs pruning every year if handsome bushes covered with flowers are wanted in place of tall, leggy objects with the

flowers all at the top. All flower clusters should be promptly cut off as soon as the plants have ceased blooming, and the multitude of suckers that invariably springs from the base of the common lilac should be repeatedly removed throughout the season. The lilac flowers on the wood of the past season's growth, and must therefore not be cut back in the winter. Thinning, may however, be done. I always carefully examine the bushes in the winter-time, and cut away the weak growths and crowded or superfluous branches, but I do not cut back, as the flowers for the season would thereby be lost. Lilac bushes that have been neglected for a considerable time will be very tall and naked at the base, and will also be a dense mass of shoots. In such cases it is best to cut back in the winter-time, say within three or four feet of the base, to recover control of the bush and put it in proper shape. The flowers for the season will be lost, but the bushes will break away freely, and form dense, handsome bushes, and,



322. Lilacs used for mass planting. Almost as well known as the common lilac is the Chinese (*Syringa chinensis*) in the foreground. It has larger, longer and looser flower masses than the common lilac and blooms at the same time

other conditions being equal, they will flower so freely the following season and have such perfect shape that the loss of the one season will be forgotten.

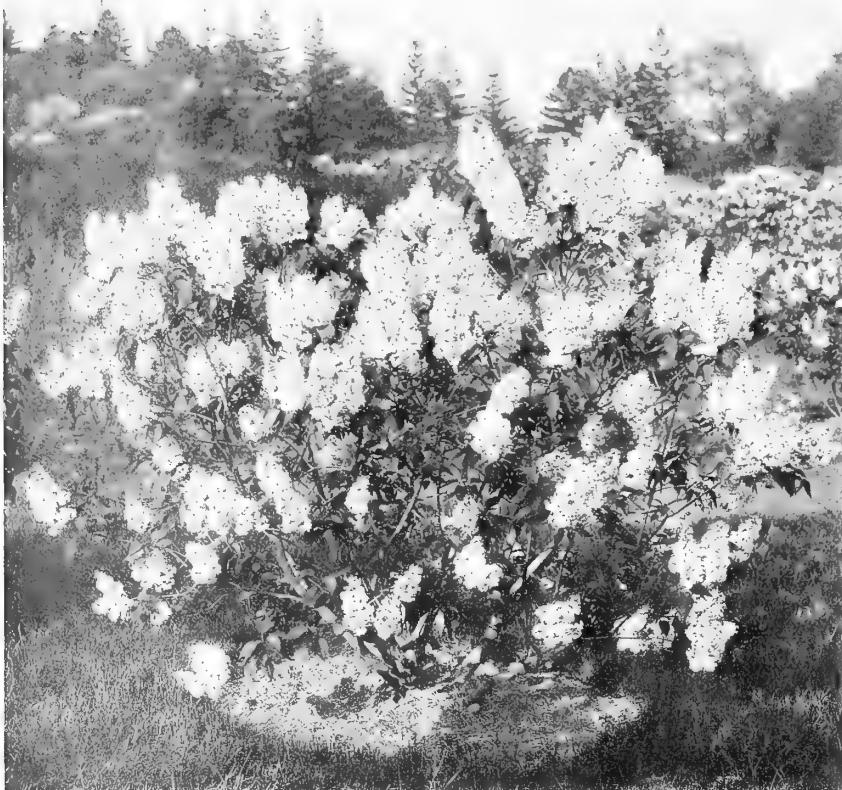
Moderate pruning and disbudding of lilacs can be done just after the blooming season. Thin out shoots where they appear to be congested, and rub against each other, and shorten back any straggling shoots that spoil the symmetry of the bushes. It is well to be cautious about summer pruning in general. When it is overdone, as it is apt to be in the hands of the inexperienced, its effect will be enervating to the subjects so drastically treated.

INSECTS

The common lilac and its varieties, and the Chinese and Persian lilacs, are liable to be attacked by scale insects; but spraying with a twenty per cent. kerosene emulsion, or crude petroleum applied by a spray pump during March will destroy them. In the summer-time when the young scale insects are hatching out use a ten per cent. strength of the kerosene emulsion. Be careful not to spray branches too heavily, especially with the crude oil. It should not be given so heavily as to run down the main stem, as a concentration of oil at the base of the plant is liable to injure the roots.

WHEN TO PLANT

Plant the common old-fashioned lilac and its varieties in the fall; all the others may be planted in either fall or spring. The common lilac is among the few quickest of deciduous plants to respond to spring warmth and expand its buds. Therefore, if it is planted in spring the season's growth will not be nearly as strong as that resulting from fall planting. Of all the many lilacs which are in our gardens and parks to-day the varieties of the old common lilac (*Syringa*



321. The new double lilacs are vastly superior to the plain old-fashioned double one. This variety is Alphonse Lavalle, flowers violet-blue, borne in long, erect clusters, the individual flowers star shaped. By pruning just after flowering, bushes can be had with flowers to the ground, instead of all at the top. Can be trained in tree form also. Not all double lilacs are heavy and ungraceful, and all last longer than singles

vulgaris) are after all the most beautiful and showy. It is over thirty-five years since, that M. Victor Lemoine, the French nurseryman, began the improvements that have resulted in giving to the world what is known as the new race of lilacs.

There is a very old variety of *Syringa vulgaris* known in gardens as *azurea plena*, with



323. Good specimens for the lawn. Must be pruned yearly to keep them in proper bounds. Pruning in winter will sacrifice the next season's flowers, but overcrowded shoots can be removed then to shape the bush properly. Plant common lilacs (*Syringa vulgaris*) in fall because they start growth early in spring

small clusters of double lilac blossoms. The pistillate flowers, which never appear to have stamens, are entirely covered with the corolla lobes, so as to be beyond the reach of natural fertilization. Lemoine fertilized a number of the blossoms of this variety with the pollen of some of the best known varieties of the common lilac of that day; one of which was *Ville de Troyes*. The Japanese lilac (*Syringa oblata*) was also used. Amongst these seedlings was the first distinctly showy double lilac, with lilac-blue flowers, which was named *Lemoinei*. Some others in this set were *Le Gaulois*, *Mathieu de Dombasle*, and *Renoncule*. These new double varieties were used as seed parents, and fertilized with the pollen of the best known single sorts. From this second cross came such lovely kinds as *President Grevy*, *Alphonse Laval*, *Michel Buckner*, *Pyramidal*, etc. The work of improvement and selection has constantly progressed ever since and every year sees new, distinct and beautiful variations in form and color unknown before.

THE BEST VARIETIES, SINGLE

White.—*Marie Legraye*, large and pearly white individual flowers. *Princess Alexandra*, erect, medium-sized clusters. *Frau Damman*, large clusters, individual flowers medium-sized. *Madame Moser*, loose, prominent clusters, free flowering. *Alba pyramidalis*, pyramidal clusters.

Rosy pink to silvery pink.—All these are particularly attractive because of the delicate shades: *Dr. Regel*, rosy pink. *Eckenholt*, silvery pink, flowers abundantly. *Furst Lichtenstein*, rosy pink, individual flowers large. *Schermerhornii*, flesh-pink, shading to white. *Jacques Callot* has the largest individual flowers of any variety

known to me. *Lovaniensis*, silvery pink. *Lilarosa*, silvery to creamy pink. The last two are a good deal alike.

Dark-flowered single.—Ranging through violet-purple, purplish red, and reddish purple. *Dr. Lindley*, remarkably showy dark red in the bud. *Ludwig Spath*, the most representative purple-red. *Aline Mocquery*, the nearest approach to a distinctly red lilac. *Toussaint Louverture*, dark carmine in the bud, turning to violet-red when fully open. *Volcan*, violet-red. *Philemon*, dark reddish purple, very attractive. *President Massart*, showy dark red in the bud, has a straggling habit of growth.

THE BEST DOUBLES

White.—*Madame Lemoine*, the best double white. *Madame Casimir Perier*, dense clusters. *Obelisque*, fastigate habit of growth. *Madame Abel Chatenay*, large clusters, but has not flowered freely with us.

Lavender lilac, and bluish lilac.—There is quite a large variety of lovely forms in this group, and a selection from the following

will be satisfactory: *Alphonse Laval*, violet-blue, long erect clusters, individual flowers star-shaped. *President Grevy*, lavender-blue, very large somewhat drooping clusters. *Lamarck*, light blue, shading to rose. *Leon Simon*, bluish red. *Monument Carnot*, bluish lilac, large clusters. *Condorcet*, pale blue, shading to white. *Doyen Keteleer*, lavender-blue, very handsome. *Guizot*, bluish lilac, superb variety. *Marc Micheli*, sky blue, shading to white, very distinct.

Dark colored (from purplish red and reddish purple, to violet-red).—The best are *Charles Joly*, very dark red, perhaps the darkest of all the doubles. *Colbert*, dark red. *Georges Bellair*, dark wine-color. *Latour d'Auvergne*, violet-purple, free bloomer. *Souvenir de L. Thibaut*, reddish purple, large clusters and very double. *Maréchal de Bassompierre*, purple-carmine, very striking.

Rosy lilac to rosy pink.—*Mme. Jules Finger*, rosy pink, early flowering. *Rosea grandiflora*, rosy lilac, early flowering. *Emile*

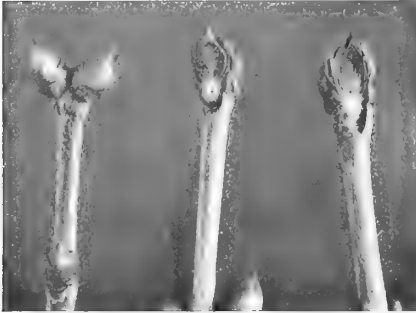


324. If you want a large-flowered, white, single lilac grow *Marie Legraye*. Don't bother with the old small-flowered sorts when you can get one like this. By cutting out all suckers as they appear, the new lilacs, which come grafted on common lilac or privet, will root above the stock; after that suckers will not bother

Lemoine, flesh-rose, dense clusters. Comte de Kerchove, soft grayish pink. Bell de Nancy, bright rose, shading to white in centre. Louis Henry, rose-violet.

SPECIES THAT EXTEND THE SEASON

The season of lilac flowers extends over seven weeks, beginning very early in May. The earliest species to flower is *Syringa oblata* which at Rochester, N. Y., comes into bloom about May 6th. The flower clusters are not shown as prominently as in the common lilac, but they are very fragrant. In addition to flowering first of all, this lilac is remarkable as the only one on which the foliage colors in the fall, assuming a rich russet-red tint. The common lilac (*Syringa*



325. Flower buds of the lilac are longer than leaf buds. Winter pruning destroys the flowers which are already formed in the dormant buds and which develop in spring as soon as the warmth is felt

vulgaris), with its large train of showy varieties, follows about a week later. This species is the best for the general public, but all the others are worth growing because they extend the season of bloom. Incidentally they are not attacked by borers.

Blossoming about the same time as the common lilac is the so-called Chinese Lilac, (*Syringa Chinensis*), of obscure origin, but said by Mr. A. Rehder to be a hybrid between the common and Persian lilacs, and of world-wide distribution, having been found long since even in the gardens of Peking. It is remarkably handsome in bloom, producing on different varieties enormous lax clusters of purple, red, and white flowers, and is distinguished from the common by this striking feature.

The Persian lilac (*Syringa Persica*), a good deal like the last in the disposition of its flower clusters, but a smaller growing shrub, from four to six feet in height, with narrower and smaller leaves; and in its several varieties with flowers varying from purple, and lilac, to white.

Syringa pubescens is a slender branched shrub, with numerous short clusters of rosy-colored, long-tubed, deliciously fragrant flowers. It comes into bloom about the end of May and first of June. It is a choice species from northern China.

Syringa villosa usually comes into blossom about the end of the first week in June, and has numerous dense oblong clusters of rosy-colored flowers borne on the ends of all the branches; and as the terminal bud, which does not develop in the common lilac, always grows

in this species, the branches frequently are furnished with three clusters instead of two. The foliage is very distinctive and handsome.

In the first part of June the Hungarian lilac (*Syringa Josakea*), with purple blossoms, and the Himalayan lilac (*S. Emodi*), with dull whitish flowers, come into blossom. Some prominent botanists consider that these two are both forms of *S. villosa*, but the writer has often thought that they are both distinct enough to be considered species. It is said on good authority "that the individuals of *Syringa Josakea* now in cultivation have all come from a single plant found in a Hungarian garden, and that it has never yet been found in a wild state," but it is probably of Asiatic origin. The foliage of the Hungarian lilac has a great resemblance to that of the white fringe.

Toward the middle of June, the Amoor lilac (*Syringa Amurensis*) produces very handsome thyrses of white blossoms. The plant has slender branches, and grows from six to ten feet in height. This is not recommended for general planting in exposed places, because although it is quite hardy in winter, it is very liable to be injured by late spring frosts. I have seen its leaves blackened and the flower buds destroyed by frosts in May.

The Peking lilac (*S. Pekinensis*) grows into a tall, widely branching shrub fifteen feet or more in height, with smooth, yellowish-brown bark like that of a cherry tree. The white fleecy flowers are produced on long compound thyrses about the middle of June and are very showy.

The Japanese lilac (*S. Japonica*) grows into a handsome small tree and has ornamental qualities of the highest order. The showy, fleecy-white flowers are produced in large clusters about the end of June and first of July.

The foregoing list includes all the important species in cultivation. There are two other species, *S. sempervirens*, and *S. rotundifolia*, respectively from Yunnan and Manchuria, only known botanically.

PROPAGATION AND MANAGEMENT

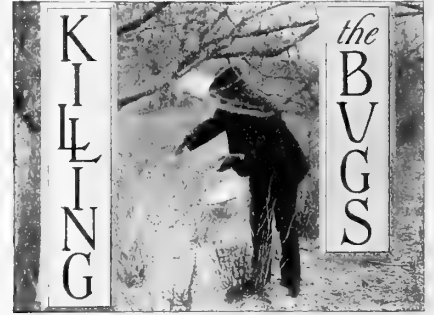
Most of the lilac species, especially the Peking and Japanese, germinate freely and readily from seed, which if sown as soon as ripe in flats and kept in a coldframe, will come up the following spring. They require no special attention, but must not be allowed to get dry. Young plants can thus be raised in great profusion. It is best to have the varieties of *Syringa vulgaris* on their own roots either from cuttings, suckers or layers.

Cuttings are made of the young wood in early summer. Placed in six inches of sand in a hotbed and kept shaded from the sun by a muslin screen four or five feet above the frame, they root freely in six weeks or two months. Layering is to be done in the late summer and September. Suckers removed in spring with good roots and cut back and inserted in the ground will root readily during the summer.

THE DREADED BORER

The lilac borer is one of the worst enemies to contend with in the growing of the com-

mon lilac and its varieties, and a good means either to destroy or control it has not been found. Plants budded on the California privet or on the common lilac, which are attacked by borers soon die, whereas when on their own roots the individual can soon be replaced by a good sucker. Root-grafting on the California privet for the varieties of *Syringa vulgaris* is a very good method. If they are planted deeply, the privet suckers will sprout from the base for a year or two, but if these are promptly removed as they appear they will vanish in time entirely, and the plant will get on its own roots, and send up suckers and sprouts of its own. When this occurs it proves that the life of the privet has ended.



Rose Beetles, Squash Bugs and Asparagus Beetles

ROSE beetles appear some time in June and in sandy localities are liable to cause very serious injury. It is difficult to destroy these insects either with poison or a whale oil soap solution, and as a rule it would pay to shield more highly prized plants by covering them with mosquito netting.

CUCUMBER PESTS

The striped cucumber beetle and the nauseous squash bug begin operations about this time. Young plants can be protected for a while from both with light screens. Trap the squash bug under shingles laid near the plants, and kill the bugs each morning. The striped cucumber beetle is held in check by spraying with a poisoned Bordeaux mixture or even dusting heavily with land plaster or ashes.

ASPARAGUS BEETLES

The asparagus beetles and their grubs are frequently abundant at this time and young plants at least should be thoroughly protected with a poisoned spray.

SCALE INSECTS

The young of two of our common scale insects, the scurfy scale and oyster scale, appear the latter part of May or early in June, and there is no better way of keeping them in check than by thorough spraying at this time with an insecticide like the whale oil soap solution, one pound to five or six gallons of water, or the standard kerosene emulsion diluted with about nine parts of water.

E. P. FELT,
State Entomologist of New York.



Late Planting of Dahlias Assures September Bloom

Photographs by H. TROTH and L. BARRON

CONTRARY to the general belief June or later is the time to plant dahlias, and as good results will be had by planting as late as July 1st, as on the first of June. Many people bend all their energy to plant dahlia roots at the earliest moment after the danger of late frost is past. This usually means from about the 15th to 30th of May. Some few people try to get the roots planted even earlier. Many of the most successful growers defer planting to as late a date as possible for the reason that plants put in the ground early start into growth and are well advanced by the time the hot weather of July and August arrives. If this period is ordinarily hot, and the plants are on a heavy soil, the chances are that they will stop growing; and they never recover afterward. Very many disappointments in growing the dahlia are due to planting too early. The best success I have ever had were from plants put into the ground on July 1st to 4th. Of course in an abnormally cool and wet season, the reverse holds true and the chances are that really early planted roots will do better than late planted.

WHEN THE ROOTS BEGIN TO GROW

Old roots that have been stored in the cellar all the winter will push out shoots early in the spring; but there is no necessity to plant them at once. Of course they must be removed from the cellar, taken out doors, and laid on the ground in a shady place until they have to be put in the ground. Late planted roots—which may be whole clumps or divided so that there is a tuber and one eye to each piece—can be set out at intervals of at least three feet.

If one has a special liking for dahlias it is well to make several plantings. The first about the middle of May, the second and third at intervals of one month each. From this system a succession of flowers will be had all the season from about July 15th till the early frosts cut down the tops. The dahlia is very sensitive to frost, and will not survive the first touch which usually comes about the end of September. From the latest planting a good lot of high quality flowers may be depended upon during September, and as late as the frost keeps off.

Of late years there has grown up a fancy for local dahlia shows in many country villages, and if any readers of THE GARDEN

MAGAZINE want to do themselves credit at these contests, they must rely upon the late set roots. The plants must be kept growing without any check from the time they are set out, and disbudding should be done to secure the largest flowers.

PLANTING AND CULTIVATION

Roots (old clumps, or divided to a single eye) should be planted in a good garden soil so as to be six inches below the level of the bed, and the soil filled in to just cover the crown. As the stems push up, the extra soil is gradually raked down during routine cultivation, until the surface of the bed is leveled. All through the season, water must be given with judgment. Don't make the mistake of keeping the ground too wet, for that merely induces succulent, tall growth. It is best to give water only moderately, say once a week, but let that be a thorough soaking. Keep the ground stirred with a hoe once a week, and the quantity of water needed will be greatly lessened.

FERTILIZERS TO USE

A mixture of four parts bone meal and one part nitrate of soda, gave successful results when applied as a top dressing on

sandy soil after the plants were well up; apply at the rate of one ounce of the mixture to a square yard of bed surface. On a heavy soil or a medium heavy one, on which a considerable quantity of stable manure had been used in the preliminary preparation in the spring, this was not a good fertilizer, having too much nitrogen. In such a case we have had glorious flowers, remarkable for the intensity of their colors, from the use of a mixture of boneblack and acid phosphate in equal parts, and applied very freely as a top dressing, early in the season after the plants were well up. One strange feature of this treatment should be recorded—in many cases the plants fed with the boneblack and phosphoric acid failed to form tubers, and the variety was carried over only by the roots from other parts of the garden.

The gardener who has put his roots out very early, can secure a later season of bloom by pinching out the growing shoot and inducing branching and then pruning out extra growths to keep the plant open to air.

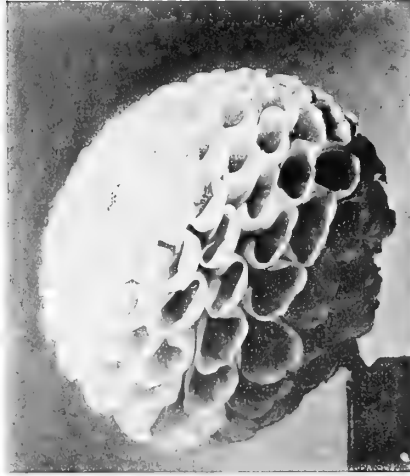
Stakes in a garden are more or less of a nuisance at any time, and one objection to the dahlia has been the necessity of staking it. This is largely obviated by late planting, and it is a fact that the largest commercial



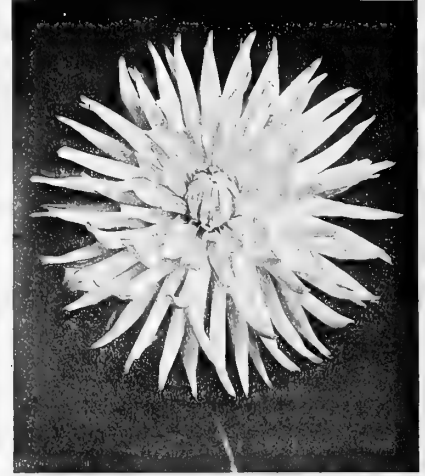
326. Dahlias planted early and too close together become tall and leggy. The ideal spot is one exposed to full sun and quite open. Roots planted three feet apart at least in late June give best flowers in September



327. The "decorative" flower has flat, broad rays. It is intermediate in form between the show and cactus types. Very useful as a cut flower



328. The "show" type. Formal, quilled; self colored or darker at tips. A "fancy" is lighter at tips. The formal flower of the old florists



329. The most popular and modern type, with most brilliant colors, is the "cactus." Rays narrow, pointed, edges rolled back

growers do not stake a single plant. The amateur need not do it either, if the garden is open to plenty of air and the plants not crowded together.

WINTER STORAGE

After the plants have been cut down by frost in the fall, there is no need to hurry over getting the roots out of the ground. Dig them any time in November, and store them in a warm, dry cellar. Kept on the floor of a house cellar, where the furnace is in operation all the winter, buried by coal ashes, they will have just the right amount of heat and moisture necessary to keep them properly for next spring, when they are to be carried out doors again and put in a shady place till planting time arrives. The advantages of this late planting are relief from worry over getting the roots into the ground in the early spring when so many other details claim attention; and getting the best flowers in early fall. I do not consider the dahlia as a summer flower.

SOME GOOD VARIETIES

This list of varieties is recommended from my own trials. There are hundreds of others just as good, but I have been delighted with the following:

Show.—White, Blush, white-edged purple; Pink, A. D. Livoni; Yellow, Queen of Yellows; Dark Red, Thos. White.

Fancy.—Light, Penelope, white and lavender; Medium, Striped Banner, red and white striped; Dark, Frank Smith (sometimes tipped white).

Cactus.—White, Winsome; Pink, Kriemhilde; Yellow, Mrs. J. J. Crowe; Bright Red, Standard Bearer; Dark, Matchless or Night.

Decorative.—White, Perle de la tête d'or; Pink, Mme. Van den Dael; Yellow, Clifford W. Bruton; Red, Lyndhurst; Dark Red-purple, Catherine Duer.

Single.—Twentieth Century strain for very large size, comes in a variety of colors. There are single varieties of the cactus type, but they are so very ineffective in the flower

that they are not recommended for general cultivation by the amateur.

Of the colorette type, which differs from the plain singles in having an inner series of short tubular florets, two or three varieties are known, but none are worth growing for their beauty.

New Jersey.

LESLIE HUDSON.



How to Make and Use an All-round Fertilizer

THE most intelligent way to buy fertilizers is to buy the three elements separately and mix them at home. This is impracticable if you are in a hurry and know nothing of the subject, and the average hired man will not do a thorough job of mixing unless you stand over him.

If you don't want to study fertilizers, but would like to do something more intelligent than buy a mere brand, ask your seedsman for some *high-grade* complete fertilizer that comes as close as possible to one of these two formulas. The chances are that he will send you a brand anyhow, but you will have the satisfaction of knowing that you are getting a high-grade rather than a low-grade product. When a man makes a living from the land he buys fertilizers on such a big scale that he is foolish not to study how to buy his ingredients separately; but in the home garden the scale of operations is so small that the amount of money saved is inconsiderable. However, the home gardener does not put a commercial

value on his time spent in home work, and fertilizers are an interesting study.

The best all-round fertilizer for lawn and garden use on all sorts of soils is one that has nitrogen, phosphoric acid and potash available in the proportions of 1, 2, 3. The owner of a small garden need not bother about having a whole lot of different special fertilizers for different crops; even if he has an acre of corn or an acre of potatoes, the 1, 2, 3 formula is all right for every home purpose. Another good formula for lawn and garden is 2, 3, 4, which is a reduction of a little more than 16 per cent. in the potash, and is a better formula for quick-growing green crops like cabbage or spinach, or even for grass.

HIGH-GRADE VS. LOW-GRADE

Use high-grade fertilizers. They seem to cost more, but they are usually cheaper, because the bulk is less and therefore you save on freight and the labor necessary for mixing and applying.

Such are nitrate of soda and ammonium nitrate, giving nitrogen; bone or dissolved rock for phosphoric acid; and the sulphate or muriate for potash. All these have the real food elements in such a form that the plants can make use of them at once. The percentage of the three elements present is not a sufficient guide. You must know the percentage of available plant food—i. e., food that can be used by the plant at once instead of being slowly released in subsequent years. A fertilizer may be high grade in quantity of food, but low grade as regards availability, so the mere analysis cannot be taken as an exact guide, but, speaking broadly, a high-grade fertilizer should have the essential plant foods present in about these proportions: Nitrogen 10 to 14 per cent., phosphoric acid 20 per cent., potash 40 to 50 per cent.

A ready prepared mixture of substances which will fulfil these requirements, and which answers to the requirements already stated, should be bought in hundred pound lots for about \$2.50. In buying fertilizers the old rule that the best is the cheapest is well illustrated—never buy cheap, bulky fertil-

izers, for you are paying for a lot of useless stuff which also costs for the handling and carriage. Buy the best and use it intelligently.

ESTIMATING QUANTITIES FOR SMALL GARDENS

All the books give good advice in the use of fertilizers for the acre, but the average home gardener wants to know the quantities in terms of smaller dimensions. Five hundred pounds an acre means 3.1 pounds to the square rod or, roughly speaking, one ounce to the square yard. To apply in liquid form dissolve one ounce in a gallon of water. The quantity given—500 pounds to the acre—is a safe quantity for all general purposes, for the lawn, for ornamental trees and shrubbery.

Plants like spinach, squash, cabbage, lettuce, onions, will take fully four ounces to the square yard or 1,250 pounds to the acre. The home orchardist can safely follow this table:

Fruits	Lbs. per plant	Lbs. per sq. rod.	Lbs. per acre
Apples.....	5.5	3.8	600
Blackberries.....	0.4	4.4	700
Cherries.....	4.5	5.6	900
Cranberries.....	0.25	3.1	500
Currants.....	0.25	3.8	600
Gooseberries.....	0.25	3.8	600
Grapes.....	1.3	5.0	800
Peaches.....	5.0	6.25	1,000
Pears.....	5.5	3.8	600
Plums.....	4.5	5.6	900
Quinces.....	2.25	4.4	700
Raspberries.....	0.25	5.0	800
Strawberries.....	0.4	10.0	1,600

Scatter over an area under each plant equal to the spread of the foliage and rake in, or broadcast evenly over the entire surface and harrow in. Do it at once.

VALUE OF THE THREE ELEMENTS

In nearly all states dealers in fertilizers are bound by law to give a guaranteed analysis with all fertilizers, and manufacturers generally have a statement attached to their goods, no matter where they are sold. The purchaser needs to take note only of the figures relating to nitrogen, soluble or available phosphoric acid and potash, and should see that these terms are plainly stated, not being involved with other terms, as, for instance, "Nitrogen as ammonia." The point is how much nitrogen—not how much ammonia, which is only part nitrogen. In the high-grade commercial fertilizer nitrogen should be bought for about twenty-five cents, phosphoric acid for seven cents, and potash about six cents. With these figures in mind and the guaranteed analysis before you, it is easy to arrive at the total value of plant foods.

SOME PRACTICAL FORMULAS

The guaranteed percentage for the analysis multiplied by twenty and by the price per pound of the material as given above will give the value per ton, that the retail consumer should not exceed when buying. The actual values are fluctuating and cannot be stated exactly; neither do they apply equally to all forms in which valuable fertilizers can be had. Each one must judge for himself, merely taking these figures as guides.

When a garden is large enough to have a whole acre in one crop it would be better to

supply its special needs by a modification of the stock fertilizer or by the purchase of one specially prepared for the particular crop. Succulent crops would be benefited by an extra supply of nitrogen, especially in the early part of the year. For such purposes the quantity of nitrogen could well be doubled. The 1, 2, 3 formula is very rich in potash, rather more so than prepared fertilizers usually are, and the proportions would bear reduction without any serious loss of yield and growth. But potash gives richness—that one factor in garden produce that should be the incentive of the home gardener. Better sacrifice quantity and size in the home garden to better quality, to richness. The use of a fertilizer rich in potash is therefore indicated. It is for this reason that wood ashes alone are so valuable in the home garden.

A plot 100 x 100 feet, fertilized at the rate of 300 pounds to the acre, will require seventy pounds of fertilizer. This can be supplied in any one of the four formulas here given. The first two are calculated to furnish actual plant food in the ratio of 1, 2, 3; the others at the 2, 4, 5 ratio.

FORMULAS FOR 1: 2: 3: RATIO

(a) Nitrate, rock and wood ashes

	Material lbs.	Plant food lbs.	Cost
Nitrate of soda.....	7	1.22	\$0.35
Dissolved rock.....	8	2.44	0.16
Wood ashes.....	55	3.66	1.10
	70	7.32	\$1.61

(b) Sulphate, bone and muriate

	Material lbs.	Plant food lbs.	Cost
Ammonium sulphate.....	19	3.855	\$1.33
Bone ash.....	30	7.65	0.60
Muriate of potash.....	21	11.505	0.84
	70	23.09	\$2.77

It is seen that the second table gives 23.09 pounds of actual food, more than three times the quantity of the other, for less than three times the cost.

FORMULAS FOR 2: 4: 5 RATIO

In these tables the same materials are used as in the foregoing, the quantities only being changed as necessary.

(a) Nitrate, rock and wood ashes

	Material lbs.	Plant food lbs.	Cost
Nitrate of soda.....	9	1.40	\$0.45
Dissolved rock.....	9	2.80	0.18
Wood ashes.....	52	3.50	1.05
	70	7.70	\$1.68

(b) Sulphate, bone and muriate

	Material lbs.	Plant food lbs.	Cost
Ammonium sulphate.....	20	3.98	\$1.40
Bone ash.....	31	7.96	0.62
Muriate of potash.....	19	9.90	0.75
	70	21.84	\$2.78

The 1, 2, 3 formula, which is relatively stronger in potash, has a very slight advantage over the other, or 2, 4, 5 formula in the

matter of cost, and is preferred as an all-around formula for the home garden, where only one complete fertilizer will be used, because of its extra strength in potash.

The compound of ammonium sulphate, bone ash, and muriate of potash is actually the cheaper, but has its limitations—it is not adapted to certain crops—potatoes and sugar beets, for example, do not like potash in the muriate form. The cost of the various ingredients in actual practice will be found to vary very considerably from the figures quoted. The greater the quantity purchased the smaller the price per pound, of course. We have stated fairly high prices which need not be exceeded ordinarily in purchasing in moderate quantities.

SUBSTITUTION VALUES

Since it may be convenient to have the different ingredients in still other combinations, these relative values are given:

Nitrogen.—One part ammonium sulphate (97 per cent.) is equivalent to 1.314 parts sodium nitrate (95 per cent.). One part sodium nitrate is equivalent to .793 parts ammonium sulphate.

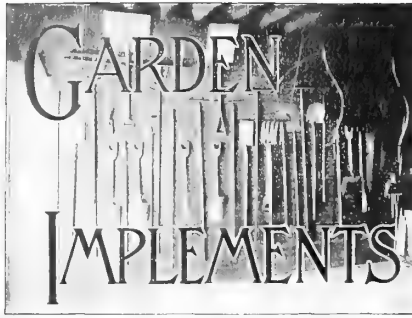
Potash.—One part wood ashes (10 per cent. potassium carbonate) is equivalent to .1284 parts chloride (muriate) of potash (85 per cent.). One part chloride of potash is equivalent to 7.78 parts wood ashes.

Phosphoric acid.—One part bone ash (91½ per cent. calcium phosphate) is equivalent to two-thirds digested rock (75 per cent.). One part digested rock is equivalent to six-tenths part bone ash.

On this basis we can substitute for the fifty-five pounds of wood ashes in the 1, 2, 3 formula a, 7.069 pounds of muriate of potash. This would give a very concentrated fertilizer in small bulk and should be mixed with sand for more easy distribution. A. VINTON.

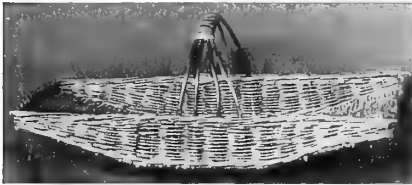
Tuberous Begonias for Bedding in Shady Places

ON the shaded north side of a house, where the ordinary bedding plants will not thrive, the tuberous begonia will give the desired brilliancy of color. For quick results set out started plants at intervals of at least eight inches each way. Tubers may be used instead of plants and should not be planted until the end of May. The begonia does best when not in full sunshine. It needs a deep, rich, open soil, where the roots can find abundance of food and moisture, especially the latter, so must be watered freely. Give water from a hose if possible, soaking the ground thoroughly and frequently in the early morning or at evening. When the plants are well developed, cover the surface of the bed with a good mulch of very well-rotted manure, or, if it can be had, a covering of sphagnum moss. As the begonia flowers are very brightly colored, the best effects will be had from planting in beds with no other plants, unless it be a mere edging of greenery. Scarlet is the dominant color in the begonias, with some few pretty shades of pink, white, and yellow, and a mixture of all these is very pleasing.



Some Practical Baskets for Garden Use

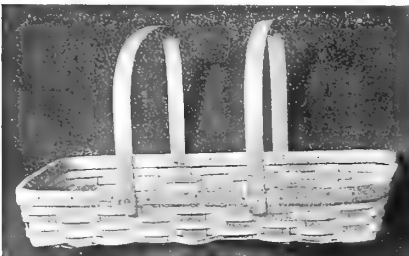
THE cheapest all-round basket is that common splint basket costing twenty cents, and it is good enough for carrying all the sundries wanted about a garden. A little better in make, and therefore costing more—a dollar—but of the same general type, is the well-known egg basket. When one does much actual work in the garden this sort of a basket is a necessity, for it will not suddenly



330. English gathering basket, of wicker. The handiest basket made for receiving flowers as cut. No crushing, no burying. Size 14 x 24 in. Costs \$3.50



331. For the woman who gathers her own salad plants. A Canadian birch bark "corceau" is very light. Costs 25 cents. Diameter 12 in., depth 4½ in.



332. A peddler's basket is the cheapest good gathering basket. The double handle keeps it steady on the arm, leaving both hands free to use. Costs 35 cents. Size 14 x 22 inches

go out of commission. For the woman in the garden who likes something of a more fancy type, the Canadian corceau of birch bark is recommended as light and durable. It is ideal for gathering fresh vegetables and costs only a quarter. The Carolina Mountain basket has its use as a fancy basket, really strong and serviceable, for carrying the odds and ends of garden tools, shears, knives, hand trowel, string, labels, etc., its narrow top adapting it specially to that purpose. It costs ninety cents.

The best cheap basket for general purposes is a wicker market basket, costing about thirty-five cents. It can be used for both gathering and carrying. Being wider at the top than at the bottom the flowers may be stood upright in order to avoid crushing the blossoms. They can be carried to the house and arranged in vases directly from the basket, which is not possible if the tops of the flowers are packed together. The heads need more room than the stalks.

By far the best basket for handling cut flowers is the strongly made and unique English basket, costing \$3.50. (See Fig. 330.) Flowers can be laid in it in rows, each color and variety by itself, and so that tiresome sorting after you come in from picking on a hot morning can be obviated. Unfortunately this basket can be had at but one or two places in this country. The next most convenient basket for the flower gatherer is the pedler's basket which is bought for thirty-five cents. It is shallow, admits of laying flowers in rows, but the raised edges greatly limit the capacity as compared with the regular gathering basket. One distinct feature is the double handle by which steadiness is secured when the basket is slung over one arm and the two hands left free to gather. It is a handy article for the vegetable gardener too, as the contents are kept well in sight, and the edge keeps them from rolling off when moving from place to place.

M. L. B.

The Morning Glory as a Weed

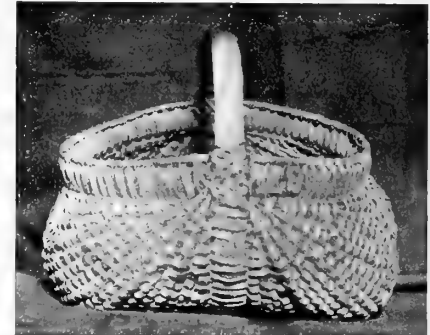
ON page 15 of the March GARDEN MAGAZINE a writer advises the planting of morning glory on the garden fence! Now I kept a man employed a great part of four successive summers in my half-acre vegetable garden, pulling up morning glory vines by the roots.

The vines were in the garden when it came into our possession and were everywhere. They wrapped up the corn and all the other plants that stuck out of the ground and effectually smothered them. The man went up one row and down the next and when he had gotten over the ground once it was high time for him to begin again at his first row. It is only now and then that one comes up now, and we are on the watch for these. I shall not intentionally grow morning glories on my garden fence, but maybe my garden was in some way particularly adapted to their taste.

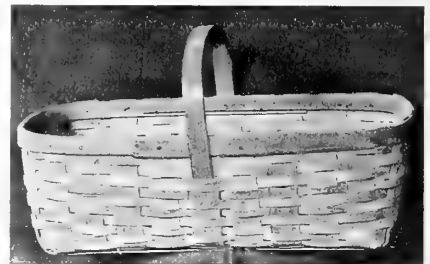
Pennsylvania. E. SHIRLEY BORDEN.



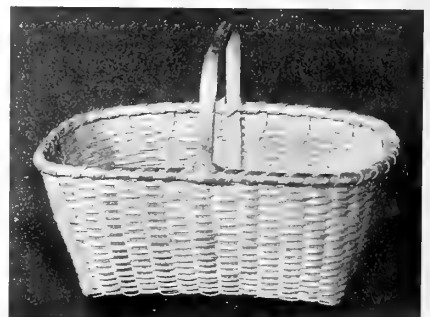
333. Best for general purposes. A wicker market basket costing 35 cents. Very durable. Cut flowers placed upright in this basket have more head room than if the sides were upright. Strongly built in order to carry heavy weights. Size 11 x 15 inches



334. For the various odds and ends which are necessary about the tidy home garden: string, labels, pencil, pad, etc. A basket wider at the bottom is handy. A Carolina mountain basket, 8 x 8½ inches, costing 90 cents



335. A splint basket is good enough for light work about the garden, but soon breaks to pieces. Size 13 x 22. Costs 20 cents



336. The well-known egg basket is serviceable for all-round garden work—e.g., picking off seed pods, weeding, carrying pots and smaller tools. Costs \$1. Size 9½ x 14 inches



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Four-Leaved Water Clover

THE water clover (*Marsilea quadrifolia*) is a hardy, flowerless plant which is related to the ferns, but looks like a four-leaved clover. It is not in general cultivation, but ought to be. The picture shows what a pretty surface-cover it makes. The plant multiplies rapidly and when crowded will run up the bank and hold its own with grasses and sedges. Like all other rampant water plants it must be checked occasionally or it will crowd out choicer things. It likes still or slowly moving shallow water. The growth shown in the picture, and more too, all came from one root-stock planted a few years ago at the New York Botanical Gardens in the little brook which traverses the



337. The water clover (*Marsilea quadrifolia*), a flowerless plant which is related to the ferns, but looks like a four-leaved clover. It is not commonly cultivated, but ought to be. New York Botanical Garden

herbaceous grounds. If space is limited, the water clover can be grown in a submerged tub, which is a good way to check any rampant water plant.

The subject of this sketch, *Marsilea quadrifolia*, is a native of central Europe; it is also said to occur in Japan and northern India, but considerable doubt as to this exists. Many years ago it was discovered growing in Bantam Lake, Litchfield County, Conn., by the late Dr. T. F. Allen.

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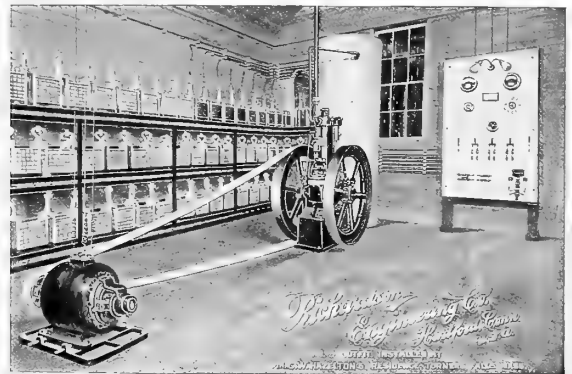
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A Quarter-Acre Pickle Garden

Photographs by PAULINE SPERRY

THERE were two of us who had finished college, and before settling down to the usual occupation for college women, we were anxious to prove our ability to earn something with our hands as well as with our heads.

We determined to have a pickle garden. In a college town there was sure to be a demand for all we could supply. We kept our outlay for labor down to \$1.75: \$1 for plowing, 50 cents for harrowing, 25 cents to a boy for delivering in the height of the tomato season.

Early in the spring we secured the use of a quarter-acre lot for furnishing the owner's table with cucumbers. Our lot was plowed and harrowed, and we put in a hundred hills of cucumbers, with a little bone dust in each hill, sowed onion and cabbage seed, and by the last of May set out some sixty thrifty tomato plants which had been grown in boxes in the house. On June 4th we began setting out cabbages, and continued to do so until we had some two hundred hardy heads.

Through June we hoed and weeded diligently, and as our cucumbers appeared we fought the striped bug. Wood soot was plentifully sprinkled on the growing vines.

Our cucumbers blossomed on July 5th. On the 14th I made my last round with the



338. Wood soot from the house furnace kept the striped bug within bounds

soot-pan, and found but two bugs for my pains. On the 20th we had our first cucumbers for the table. On the 25th, after continued dry weather, I carried water to the twenty hills nearest the source of supply.

From July 20th to September 22d, when the frost caught the vines, we were kept busy picking "cukes," filling orders, and pickling what we could not immediately dispose of. Our largest picking for one day was 385. The total for the two months was 4,445.

Careful records of outlay and income, hours of labor, daily count of cucumbers, and special dates of interest for reference



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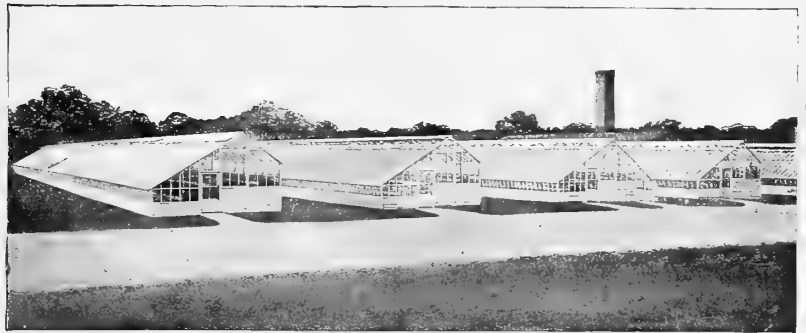
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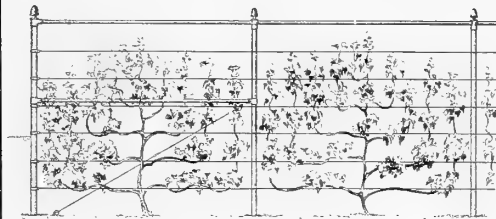
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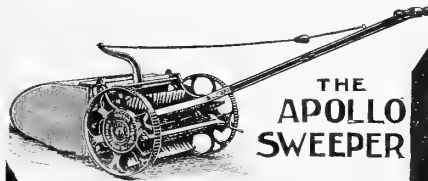
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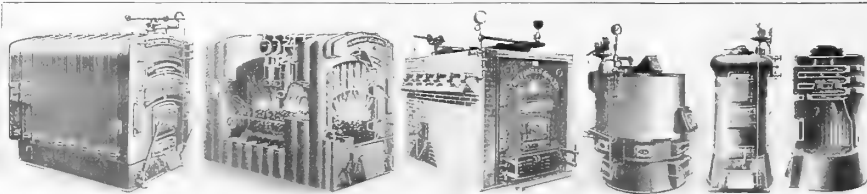


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another year were kept. Our expenses were as follows:

Plowing.....	\$1.00
Cultivating.....	.50
Delivering.....	.25
Seeds.....	.45
Bone dust.....	.25
Garden hats.....	.50
Vinegar.....	.80
3-quart crock.....	.24
Two 1-quart crocks.....	.16
Mustard.....	.15
Brown sugar.....	.50
Salt.....	.05
Cinnamon.....	.05
Olive oil.....	.05
Soap.....	.10

Total..... \$5.05

We paid nothing for cucumber and tomato seeds and the few cloves needed in pickling came from the family pantry. These and



339. Weeding is reduced to simplicity when the hand cultivator is brought into work

additional favors, chief among them being the use of the kitchen and the gasoline stove in pickling, we nominally repaid by agreeing to furnish cucumbers for the table and for the winter's supply of pickles. Also, we had the use of the family crocks and jars.

PUTTING UP PICKLES

One who has not tried it cannot justly conceive the annoyance of taking care of cucumbers, a hundred or so a day, for two months. They must be picked, washed, spined, and salted; within the next three days they must be taken from the brine and put into hot vinegar, properly tempered with sugar, spices and a pinch of alum. And while the first lot is thus receiving final treatment, a second and third lot are coming along in initial stages.

We found hoeing, properly conducted, almost as pleasurable exercise as tennis. We discovered there was a right and a wrong way to hoe—and eventually we became expert in bending at the correct point and distributing the strain so as not to overtire back or biceps. I have hoed three hours on a stretch and longed for more. There is also a right and a wrong way of stooping to pick cucumbers. It is a little more trouble to



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Hammond's Slug Shot for Potato Bugs, Currant Worms, Cabbage Worms, Etc.



Sold in large or small lots

To the Editor of American Gardening:

In your issue of June 18, on page 399, I notice a good article on the Colorado Beetle or Potato Bug. For the benefit of your numerous readers I would advise them to try Hammond's Slug Shot. I have used it here this season with excellent results on Potatoes, Egg Plants, Cucumbers and Squash, for potato bugs, and also for striped beetles, and it is the best remedy I know of, simple and effective. I purchased two of the dusters, and they are very useful articles. The best time to dust the plants is early morning, as the substance adheres much better when the dew is on. A light dusting is sufficient, and woe betide the bugs or the larvæ. Once they get a taste of it they seem to shrivel up right away.

GEORGE STANDEN, Gardener to Col. D. S. Lamont
Millbrook, N. Y., 1904

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HARDY PERENNIAL PLANTS We have a number of varieties of these favorite plants potted in order that our customers may still be able to make successful plantings.

CANNAS June is still a good time for planting these popular bedding plants. We carry large quantities of all the desirable varieties.

LARGE PALMS for porch and lawn decoration.

Dreer's Garden Book for 1905 describes all above and contains much information of interest to those who have a garden. SENT FREE to all who mention THE GARDEN MAGAZINE.

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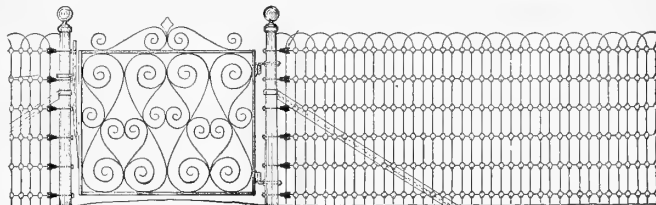
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PEARLINE
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PREVENTION

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Best Ever Lawn Sprayer

Regular mist 40 feet radius.
No shutting off water to change position.
Hold in your hands and spray delicate flowers.
Will not puddle if left running all day.
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Write for Cat. 39.



keep your back straight from the hips up, but it pays at the end of a hundred hills.

OTHER CROPS

Meanwhile we were paying little attention to our growing cabbages, till we discovered the big fat green worm was thriving in our absence. We gave him a bath composed of a cup of salt, a tablespoonful of soda, and a tablespoonful of red pepper to a gallon of water; he gave us little trouble thereafter.

But the pride of our garden was our tomato patch. Whether it was on account of our home-grown seed, or the light sandy soil, or the wide space between the plants, our tomatoes were ready for the table two or three weeks ahead of any others in town. The vines were not handsome to look at, for we had not staked them, and they straggled all over the ground. But they had plenty of room to straggle, and to get the sun on all sides, and they bore amazingly. For some weeks we commanded corner prices, getting a dollar a bushel. By the time they became more plentiful and the price dropped to sixty cents, we had secured a market for all we could supply.

Late in August the insertion of an advertisement in the village weekly paper brought a surprising response. After September 22 the demand for pickles was lively.

SALAD PICKLES

Our onion crop was practically a failure. The little white onions were in demand for a variety of salad pickles, and we could have sold more if we had had them, at ten cents a quart. It is some trouble to make salad pickles, but they are a delicate morsel. You want cucumbers large enough to slice across to the size of a big nickel. Cover a gallon, sliced, with salt water over night. Slice with them one pint small white onions. Wash in fresh water, add one-quarter pound mustard seed, one-quarter pound celery seed, cover with hot vinegar; when cool stir in two tablespoonfuls fresh olive oil. Set away in a covered crock. These are sure and do not spoil.

MUSTARD PICKLES

The easiest kind of pickles to put up is the mustard pickle. There is no preliminary salting. To one gallon of cold vinegar add a cup of salt, a cup of sugar, a cup of ground mustard. Pour the mixture over as many cucumbers as it will cover. Set away in crocks.

It was a relief when the frost came. My only regret was that, after all the patient labor, only one muskmelon out of the twenty hills was ripe enough to eat. We had planted two rows down the middle of our cucumber patch. Nearly a hundred melons set on the vines, and the crop was not wholly wasted, for they made delicious sweet pickles which sold for 35 cents a quart.


The borders in the garden were planted with sweet peas, asters, and mignonette.

We put in something more than one hundred and sixty hours' labor, and netted above expenses \$25.25, not counting the late cabbage crop and the fun and exercise of it all.

Michigan. MARY FRANCES WRIGHT.

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provides the means of assuaging plant thirst.

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 The Quality
 Is There!
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 in price—
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ANNUAL FLOWERS

Why Every One Should Have a Separate Place for Cut Flowers

YOU can't eat your cake and have it too. If you cut flowers all over your grounds, particularly near the house, the place will not look its best. Moreover, we none of us have enough cut flowers for house decoration and to give away. If you plan to raise a great many flowers for cutting in beds and borders you are simply inviting backache and hours of unnecessary work. The cheaper, easy and sensible way is to have a separate place for raising flowers that you want for cutting. Select a place that is out of the way, so that the removal of the flowers will not spoil the garden or landscape effect. The vegetable garden is just the place, because you can have long, straight rows and cultivate them easily by horse or wheel hoe. You can trust an ignorant laborer to hoe anything that is in straight lines, but he is the ruin of an informal border.

Have the rows far enough apart so that when the plants are full-grown there will be space to move freely without bruising them and also to avoid being drenched with dew while picking them. If our space allowed we should plant the larger plants in rows six feet apart.

For cutting, the following flowers are particularly good: Asters, calliopsis, Margaret carnation, cornflowers, cosmos, single dahlia, gladiolus, heliotrope, mignonette, nasturtium, scabiosa, sweet peas, sweet sultans, and verbenas. They may all be planted where it is desirable to clear the ground off in the fall for spring plowing or digging. All colors are represented in this collection:

- White.* Cosmos, aster, vervena.
- Pink.* Aster, carnation, cornflower, cosmos, dahlia, gladiolus, sweet peas, sweet sultan, vervena.
- Blue and Purple.* Aster, cornflower, heliotrope, sweet pea, vervena.
- Red.* Calliopsis, carnation, cosmos, dahlia, gladiolus, nasturtium, sweet pea, scabiosa, vervena.
- Yellow.* Calliopsis, single dahlia, nasturtiums.
- Neutral.* Mignonette.

The blooming season of these flowers is a long one, beginning with nasturtiums, sweet peas and cornflowers in June up to cosmos in October and verbenas, cornflowers and mignonette, all of which bloomed in November, after heavy frosts had destroyed the vegetables in our garden. There must be no formation of seed pods if you want the "picking garden" to be worthy of its name throughout the summer.

New York. A. R. MAXWELL.

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Why California Should Beat the World on Geraniums

IT is a singular fact that we Californians neglect the geranium. Easterners envy us because geraniums grow up to the second story of a house and visitors say that a five-foot hedge of red geraniums like the one pictured in the "California Department" heading, is one of the most brilliant sights on earth. Why don't we have more hedges like this? And why don't we have more and better geraniums everywhere instead of coddling rare plants that are not adapted to our conditions? No other plant, native or foreign, seems to be so perfectly at home with us as the much-neglected geranium. Any-one who explores our foothills and canyons may find deserted cabins around which are growing many varieties of geraniums, in nearly all shades of color from white to carmine, with no hand near to till, with no moisture except the annual rainfall, yet seeming to thrive fully as well as the average native plant.

The geranium is valuable for its foliage effect alone—for massing in our drier and more barren spots—yet the geranium with us, as everywhere, is distinctly a flowering plant, more so by far than the canna and a host of other well-known "bedders." This neglect is due, no doubt, to the ease with which it can be grown. The novelty of being able to grow geraniums out of doors every month in the year appeals very strongly to the newcomer who has known it only as a much-coddled pot plant, but after he sees the possibilities of our climate, something less common—something impossible of successful growth in his Eastern home—claims his attention, to the complete neglect of the geranium.

The uses of the geranium in the garden are many and various. They are, perhaps, most popular for massing around the base of buildings, where a heavy, yet bright effect is desired. For such purposes those ranging from scarlet to crimson should be used, one shade of color only; or if more than one shade is used, the lighter shade should be kept in the foreground and the darkest behind.

The strongest favorites for banking around buildings are that class of which "General Grant" is the most popular and best-known member. For alignment along paths or roadways, a lighter and more natural effect may be gained by the use of the lighter shades and colors, for no such staid impressions are expected as is the case around residences, etc. As one gets away from the house all vegetation should gradually grow

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A great opportunity to visit one of the greatest grain and fruit raising countries, the largest fishing and lumbering industries, and some of the most aggressive, rich and growing cities in the world.

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3 to 4 feet stakes, 100 for 75 cents; 1000 for \$4.00
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lighter both in color and character (especially in front), as well as softer in tone. In such a place the light pink shades produce the happiest results.

Geraniums may be obtained in several heights (when mature), and a charming effect along a drive may be obtained by banking, that is, planting a low growing one (white, perhaps) next the road, back of this a light pink of medium growth, and in the background a rank growing, deeper pink. Such



340. The geranium grows so easily in California that it is a neglected plant. As a heavy mass around the base of a building or a palm trunk it is very effective. It is always in flower and will make a hedge five feet high that need not be replanted for five years

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IN the fall of 1903 I planted out of doors the seeds of about half a dozen hips of sweetbrier, and in the following spring I transplanted from the seed bed to nursery rows about one hundred small plants. These were given good care and by the end of the season most of them were bushes of a good size, and some with growths about four feet long. About two weeks ago these were transplanted from the nursery rows, each being carefully lifted with a good clod of earth to the place for the hedge, where, after being well pruned back, they all now look fresh, and some are already showing an increase in their young growths. They were well leaved out when transplanted.

Tennessee.

F. J. LE MOYNE.



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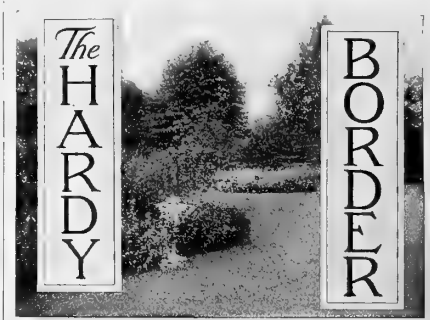
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Singular Facts in the Cultivation of Oriental Poppies

AMONG garden plants perhaps none are more impatient of removal in spring than Oriental poppies. If sown in the open ground they make, as a rule, one long tapering root straight down in the ground which, after a year or two of good growth it is impossible to dig out. The breaking of this root is not fatal, but if this happens in spring when the plant is in full leaf, it is very likely, under ordinary conditions, to lose its foliage. When this is lost, many people jump to the conclusion that their plants are dead. They are entirely mistaken since, in nine cases out of ten, the plants will recover and reappear the following September or October, after which they will make a good tuft of foliage. If you will then dig down to their roots you will find them pushing out from all around their long tap roots masses of small, fibrous, feeding roots which indicates that they are getting ready to produce their gorgeous flowers the following spring. They also make fibrous roots very early in the spring. The foliage of Oriental poppies often disappears entirely during July and August.

WHEN TO MOVE THEM

If therefore Oriental poppies are to be moved in spring, do it as soon as they begin to show signs of making new growth. If bought from the nursery see that they have been pot-grown, but don't plant after the middle of May. You had better wait till the following August or September. They will not die, however, for the least piece of root will grow and will come up from great depths, where pieces have been broken off in transplanting or removing. The very best way to increase a good variety quickly is to take it up in the fall, cut the roots into short lengths, some two or three inches long, insert them into sandy soil, where they will soon push out new crowns or buds and make vigorous flowering plants. Thence they can be removed to their desired location.

There are now many varieties of this universally admired flower offered by dealers in hardy plants, running through various shades of crimson, scarlet salmon, pink, and striped to silvery white, and dark chocolate or mahogany colored. The dark black blotches at the base of the petals have been, in many cases, entirely eliminated.

Oriental poppies may also be very easily raised from seed sown in the open ground

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in very early spring. Let them remain in their seed row until after their foliage has decayed. In September they will again begin to show signs of a new growth. Then remove them to permanent places. The largest plants will produce some blooms the second year, but don't forget to give them some protection the first winter after removal, so that they may become well established. After that they are abundantly able to take care of themselves.

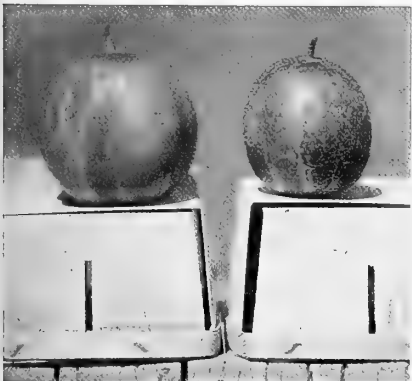
New York. HERBERT GREENSMITH.



The Lemon Cucumber

Photograph by the author

THE lemon cucumber which is, I believe, a native of this country (?) may be regarded as a new type of the large family to which it belongs. As it is nearly round, it bears a greater resemblance to an orange than to a lemon. Therefore its present name seems inappropriate. Moreover, its color, when it reaches maturity, is a deep yellow, closely approaching to orange. The flesh is tender and crisp, without that bitter taste so generally found in cucumbers. It is excellent for slicing, as I know from per-



341. The lemon cucumber, good for slicing and pickling. It is about two and a half inches in diameter and lacks the bitter taste often found in cucumbers. The shape and color of an orange

sonal experience. For pickling, ripe or green, it is also recommended, but I have not tried it in that respect. It ranges in size from two and a half to three inches in diameter, just right for one portion, and is therefore, well adapted for serving whole upon the table. The cultivation of this new comer differs in nowise from that of the ordinary cucumber.

Michigan. HUGO ERICHSEN.

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is a story of a summer love match, well told and beautifully illustrated. The small picture above only suggests the real charm of these illustrations. As a bit of readable fiction the story is well worth writing for. It is contained in a handsomely bound book of 128 pages a portion of which is devoted to the attractive mountain and lake resorts along the Lackawanna Railroad. It is a book you will like to see. It may be had by sending 10 cents in postage stamps to T. W. LEE, G.P.A., Lackawanna Railroad, 26 Exchange Place, New York.

Want Department

A special low rate is made in this department for the convenience of readers to advertise for a gardener, or for gardeners to offer their services.

Gardeners' Register

High-class men, with good records, can be obtained at VAUGHAN'S SEED STORE, 14 Barclay Street, New York City. No fee.

Competent Gardeners

The comforts and products of a country home are increased by employing a competent gardener; if you want to engage one, write to us. Please give particulars regarding place and say whether married or single man is wanted. We have been supplying them for years to the best people everywhere. No fee asked. PETER HENDERSON & CO., Seedsmen and Florists, 35 and 37 Cortlandt Street, New York City.



WATER FROM A COPPER ROOF IS SAFE

Q. Is it safe to use the rainwater collected from a copper roof and leaders for watering flowers and vegetables in the garden?

New York. G. R. M.

A. Under all ordinary conditions it would be quite safe. There could be only a very small quantity of copper in the water collected from a copper roof, and this would be almost immediately fixed by lime in the soil and become practically insoluble. Yet the same quantity might be sufficient to prevent the growth of pond scum in the water itself. There would be very little copper present in the collections from a roof not badly corroded, and most from such a roof when the rain followed a long, dry period.

GROWING SPECIMEN EVERGREENS

Q. How are evergreens (pines, spruces, retinisporas, etc.) managed to form good dense specimens?

P. M.

A. All evergreen trees for fine specimens should be planted where they are not shaded by other trees. No special treatment is requisite other than a good sandy loam.

BIG DAMAGE DONE BY MICE

Q. The mice have eaten my roses under cover. Following the practice for the last five years, I pegged down my roses late in the fall, covered them carefully with dry oak leaves to a depth of about two feet and topped the beds with pine boughs, practically as described by Dr. Huey in his excellent article on roses in the March number of *Country Life in America*, and let me say that in spite of the very severe winters recently experienced, I have never lost a rose from winter killing. Imagine my dismay on uncovering the beds this spring (March 27th), to discover that every rose on the place was killed to the ground by field mice. Not a single bush escaped. Of several hundred double Russian violets, pansies and *Phlox subulata* in near-by beds protected with a similar, though lighter covering, not a vestige remained. How can I avoid a repetition of such disaster another year?

Massachusetts. P. M.

A. They must be fought just like moles by sinking a board or mosquito wire netting around the edge of the beds. Poisoned grain scattered about the bed will kill any mice that get around the boards or wire. We believe that your roses are not killed, only very severely pruned, and will make good growth



BEES

THERE'S MONEY IN RAISING BEES

if you go into the business right, whether on a large or a small scale. Suburbanites are finding their culture as profitable as it is pleasantly interesting.

We are bee headquarters and can supply you with a full "colony" and hives to put them in, or you can collect your own "colony" with one of our "Queens." Bee supplies of all kinds at right prices.

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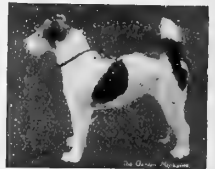


Kennel Department

Under this heading will appear each month announcements of reliable Dog breeders

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MAJOR G. M. CARNOCHAN LIVINGSTON-HUDSON, NEW YORK CITY, offers nine Fox-terrier bitch puppies at eleven weeks old. Price, \$10 apiece. All are eligible for registration, full pedigrees. Send cheque with order. Grown dogs and puppies for sale at all times. Welsh terriers also for sale.



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to rats, cats, vermin, tramps, burglars and automobile thieves. Best breed of dogs for farm, ranch, home, country residence, in the hunting field, or as an affectionate and lovable companion for young or old.

FOR SALE.—Four (4) Litters of magnificent puppies, and two (2) tried and proven prize-pedigreed Brood Bitches that will prove profitable investments to would-be breeders. Booklet for stamp.

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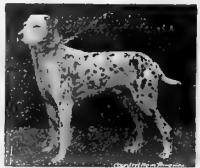
The Home of famous Boston terriers. Young, housebroken and sporty Boston terriers generally on hand. Registered stock a specialty. Send twelve cents in stamps for finest booklet ever produced on Boston Terriers. Address

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CHESNUT HILL PHILADELPHIA



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High Class Boston Terrier Puppies

from pedigreed stock; also booking orders for Airedale Terrier Puppies, best strain, all at reasonable prices.

WILLIAM WALLACE, P. O. Box 285, Waterbury, Conn.

The Most Important Points in Vine Culture

THE first point to notice in vine culture is the difference between permanent and temporary vines. The woody ones like ampelopsis, Virginia creeper and wistaria which ought to last a lifetime are naturally slow to start. They are, in fact, comparable to trees in this respect as well as in cost and the thoroughness with which the soil should be prepared for them. Since their roots are to go twenty or thirty feet deep or more, the poor soil to a depth of four feet should be thrown away and replaced by good soil, and the ground should be liberally provided with well-rotted manure or with commercial fertilizers.

If properly planted, the permanent vines will require no attention for the first two years except a little pruning. After that time the strong growers must be kept within proper bounds. It is usually easy to keep vines in good condition by cutting them back a few feet every year. Nearly all of the permanent vines will stand any amount of pruning except wistaria which does best if allowed to grow year after year without pruning. The commonest mistake in pruning vines is to allow them to grow for five or six years without any pruning whatsoever. This is why you see on porches everywhere vines that are top-heavy, *i.e.*, which have a mass of foliage at the top and scarcely any at the base. This is, of course absurd, for the purpose of growing vines is to screen unsightly buildings, and it also has the disadvantage on a porch of furnishing a hiding place for mosquitoes, and of littering the porch with leaves which fall before their time. If vines are headed back from one to four feet every year from the second to the eighth year, it should be entirely unnecessary to sweep the porch every morning so far as fallen leaves are concerned. The reason why these leaves fall in July and August is that a top-heavy vine is so crowded that the sunshine cannot enter the mass of foliage and ripen the leaves. The vines bear more leaves than they can ripen and it is those imperfectly ripened leaves that fall prematurely.

The next most important points in vine culture are to determine whether the vine needs artificial support or not, and if so, of what kind; whether you want a foliage effect or a flowering effect; how high you want the vines to grow, and whether there is any danger of damaging your property in any way. For example, ampelopsis requires no support on any surface whatever. It will grow a hundred feet high, but its flowers are inconspicuous, and since one usually wants color on the porch it is not so good for a veranda as a flowering vine which does not grow so tall. Moreover, any vine that grows twenty feet high or more may cause some trouble if it is grown directly on a frame house. You may want to remove the vines in order to paint the house. You can do this easily with any vine that requires artificial support, but it is impossible or difficult with anything that is self-supporting like ampelopsis.

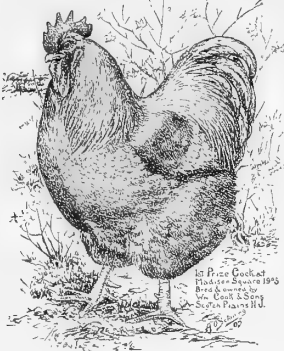
Poultry Department

While the subject of poultry is not within the editorial scope of this magazine, yet so many of our readers are interested in poultry raising in connection with their country homes, that it is our desire to make the magazine of the greatest practical interest to them and we shall, therefore, extend to the readers of THE GARDEN MAGAZINE the service of our Poultry Information Department. Any information about the selection and care of poultry or other information on the subject will gladly be given. Address, Poultry Information Department, THE GARDEN MAGAZINE, 133 East 16th Street, New York City.

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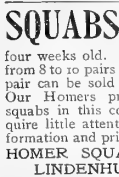
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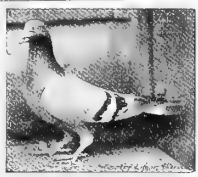
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Why Keep a lot of common pigeons that neither produce good squabs nor are an ornament to the place. We can furnish you

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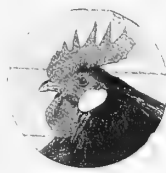
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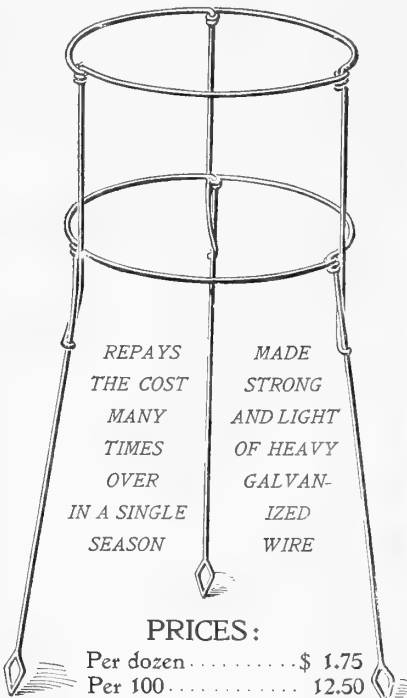
ATLANTIC SQUAB CO., Box T, Hammonton, N.J.

How Garden Boys and Girls MAKE MONEY

And older people, too, are very successful in taking many subscriptions for THE GARDEN MAGAZINE now while the gardening fever is on. People interested in gardens of all kinds want the magazine because it is the first beautiful, readable and helpful periodical of practical gardening published in America. Send postal card for particulars. Liberal commission and unusual helps. Write at once and lose no time. Address Circulation Dept., The Garden Magazine, 133-7 E. 16th St., New York.

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Hardy in Quebec

The Hardest Rhododendron Known

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Owner Highlands Nursery, 3,800 feet elevation in the Carolina Mountains, and Salem Nursery, Salem, Mass.

this season. Where the presence of mice is expected bury the shoots in earth. By piling the earth in a hill around the base of the roses you would ensure protection from both frost and mice. Mice are most troublesome to the gardener during a severe winter, when the combination of warm covering and succulent food offered by the protected flower bed is unusually welcome.

MAKING A HEMLOCK HEDGE

Q. What is the way to treat a young hemlock hedge to form a windbreak about seven feet high.

T. E. WATT.

A. Begin by planting well-grown nursery stock, three to four feet high, and set about eighteen inches apart. The leader should be cut out immediately after planting and the new leaders which develop should be shortened each year, until the hedge has attained the desired height. After the first year trim the side shoots in order to keep the hedge thick. After the hedge has reached the desired height and width an annual trimming is all that is necessary. The best time to prune is in June.



Swiss Chard an Excellent Vegetable Worth Canning

THE Swiss chard which we planted for the first time last summer grew so very rapidly that, unless we had made it our staple article of diet, we could never have kept the growth down where it belonged. As we didn't care to have it at every meal, we thought of canning some for winter use. So after a day or two of warm rain, when the outer leaves of the chard were as large as palm-leaf fans and as glossy as though varnished, I would pick all there were, and, after washing them carefully (an easy undertaking when compared with dandelions and spinach), boil them as I would for serving—about thirty minutes. Then I filled glass jars with the cooked chard with a little of the water, sterilizing the jars as for any preserving, sealed them and set them away for twenty-four hours. The next day I sterilized the sealed jars and yet a second and a third time were they put in a steamer and subjected to a thorough steaming—twenty-four hours intervening between the baths.

Perhaps so much sterilizing was unnecessary, but I wished to be certain that nothing should spoil my experiment which was meeting with a little good-natured family ridicule.

But seeing is believing, and the proof of the canned chard came the first day I opened a jar to serve with boiled ham.

Massachusetts.

B. W. B.

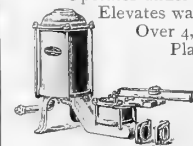
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7 low-growing and spreading plants.

- Gypsophila repens** (Baby's breath)
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- Phlox subulata**, Dwarf Moss Pinks
- Primula veris superba** (English Primrose)
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15 upright perennials of moderate height.

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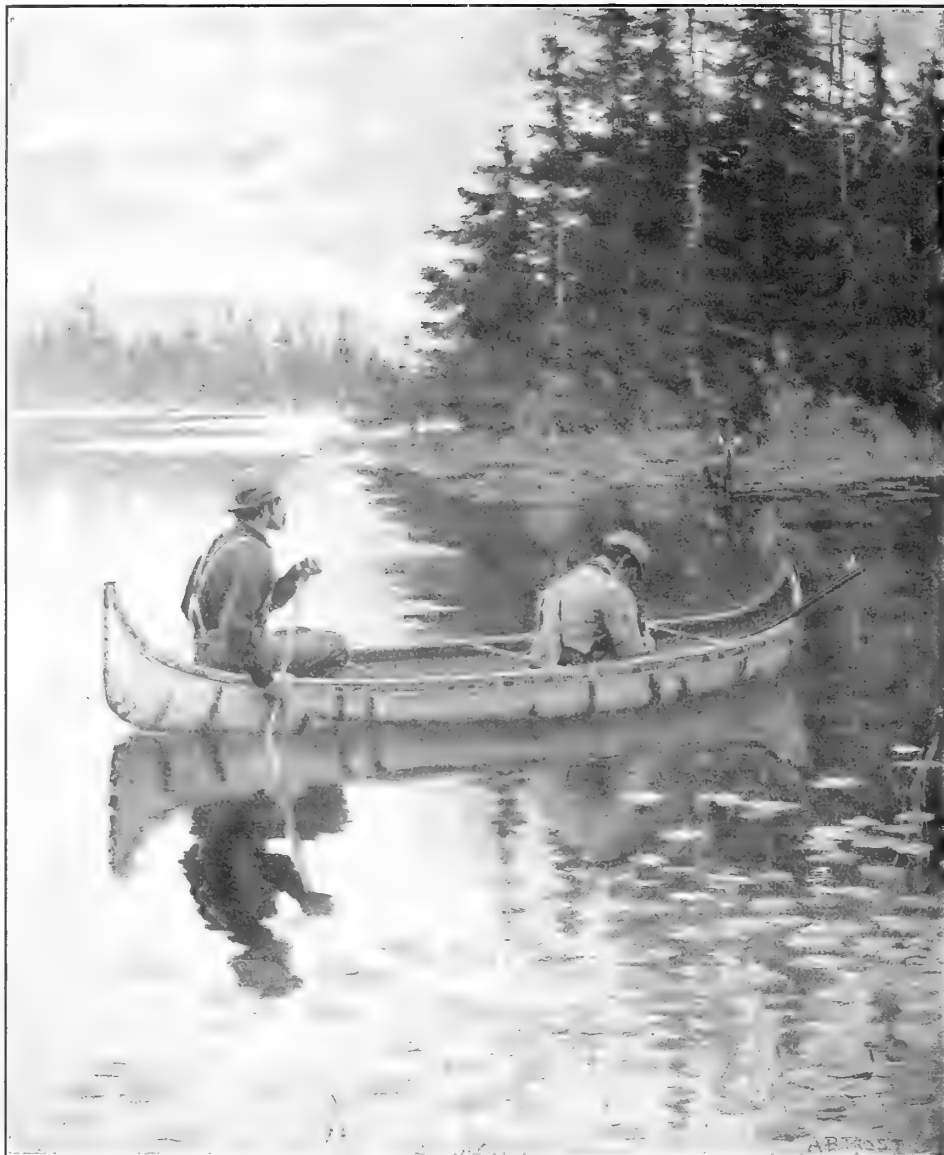
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Our General Descriptive Catalogue contains accurate descriptions of these choice novelties, also of the best

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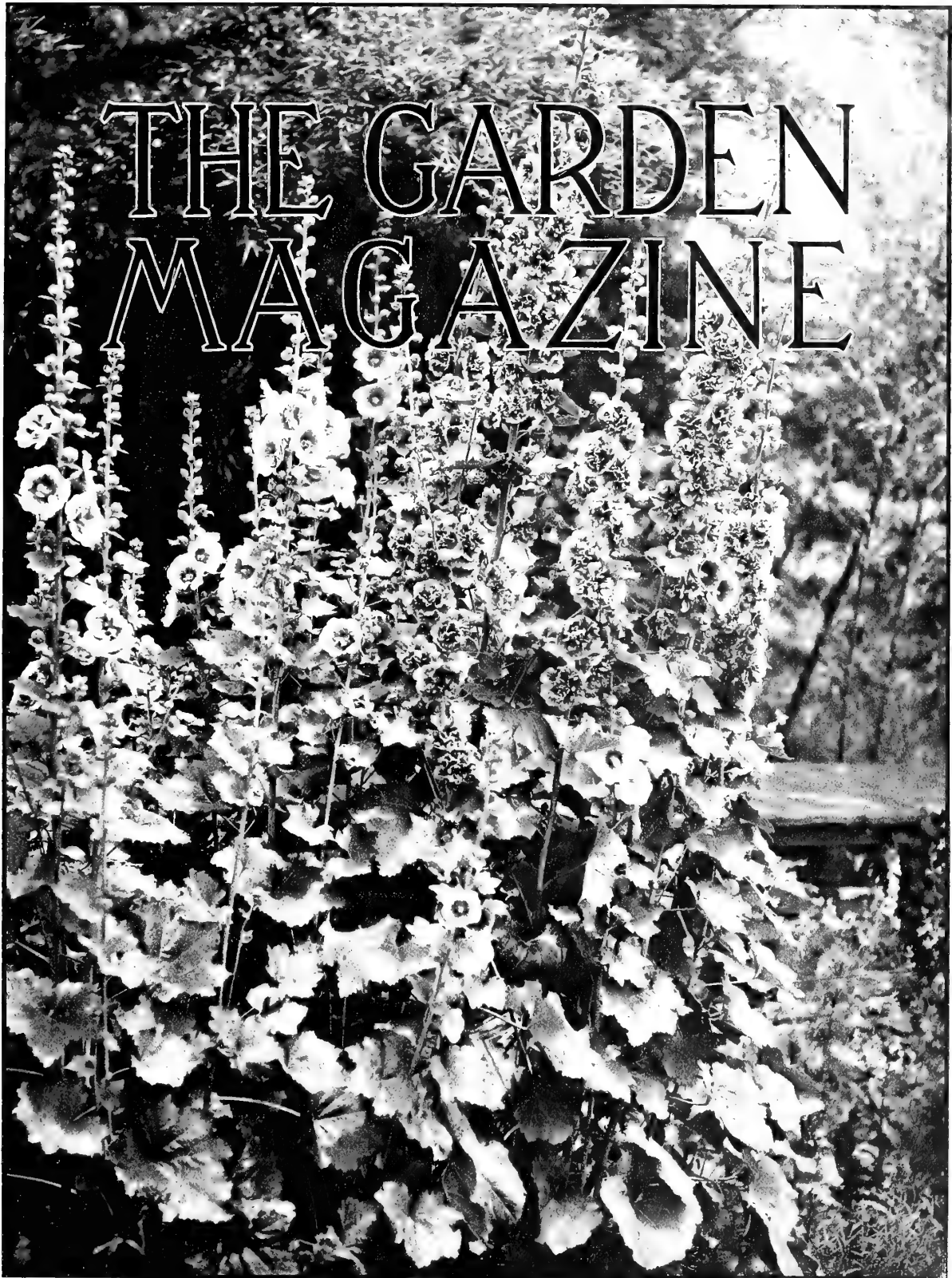
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JULY
1905

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Water Gardens for Everybody—Home Fruit Growing—Roses for Christmas Bloom
—A Greenhouse for \$500—Three Crops of Vegetables from the Same Ground

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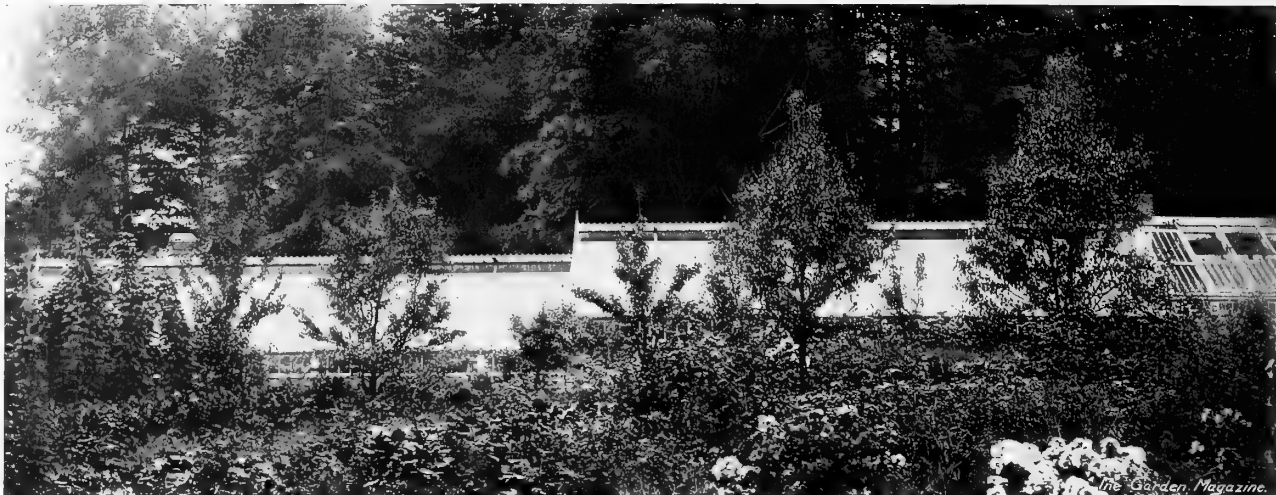
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eggs and fowls together is *nearly double that of all the gold mined throughout the world.*

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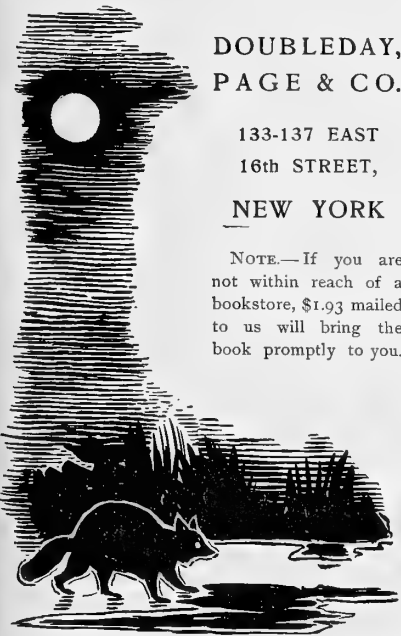
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A comprehensive and up-to-date statement of the resources of the warring nations.

The New Science of Business

This valuable department, begun in the June issue, will become a permanent feature of the magazine. Each article is a suggestive and accurate treatment of a way in which every business man can improve the efficiency of his working forces. The July articles will be:

The Value of Frequent Statements. By KENDALL BANNING. Showing the necessity to executive heads of business houses of frequent statements.

The Fine Art of Buying. By HAROLD A. WRIGHT. Character as a Credit Asset. By S. A. NELSON.

Each month THE WORLD'S WORK describes and pictures the really important events in the world's life; it is a history of our time. The magazine sells for 25 cents a number; \$3.00 a year. If you are not a subscriber send \$1.00 for a special six months' introductory subscription, mentioning THE GARDEN MAGAZINE.

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The Largest Church for the People. By ISAAC F. MARCOSSON.

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Country Life in America

THE JULY ISSUE

Roots We Eat By Edith Loring Fullerton

The Water Supply and Drainage
By E. C. Holtzoper

The Swimming Pool
By Payne Martyn

How to Play Polo
By Alfred Henry Goodwin

The Complicated Art of Plum
Culture By an expert, F. A. Waugh

Practical Game Preserves
By Howard B. Rathbone

Raising Beef in Fourteen Weeks
By E. V. Wilcox

The Country Home Reminder
A calendar of things to be done about the house and grounds in July.

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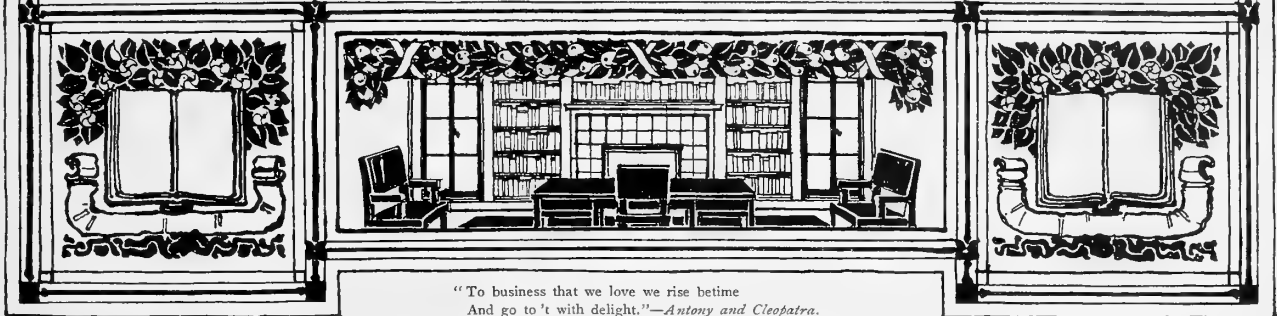
WHEN *Country Life in America* was begun, three and a half years ago, our friends told us that we could not keep up the supply of material, in pictures and subjects, to sustain the pace set at the beginning. The difficulty has been to use a fraction of the admirable material which has been crowded upon us.

We believe that our readers want the best and most comprehensive magazine that can be made; therefore we shall enlarge the magazine to cover more thoroughly all the interests in country life, to cover them as no magazine has ever done before. To do this it is necessary to increase the subscription price from \$3.00 to \$4.00 a year, and the cost of single copies to 35 cents. The change in price will take place with the February, 1906, number. The enlargement and improvement of the magazine have been *begun already*.

The magazine will be even more practical, more of a manual for every outdoor and country interest than in the past. New departments will be added; the existing departments will be enlarged; the illustrations will be more sumptuous. Subscriptions will be received now at the rate of \$3.00. A two years' subscription will be entered for \$6.00. We suggest that every reader of THE GARDEN MAGAZINE, who is not now a subscriber to *Country Life in America*, take advantage of this opportunity. These two magazines cover, fully and practically, every outdoor interest.

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THE TALK OF THE OFFICE



"To business that we love we rise betime
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FINAL WARNING

WE completed our supply of all the numbers of this magazine, and have been sending any back numbers needed to fill sets held by readers. It is well that we did so, as the demand has been much larger than we anticipated, so that our stock has run low. We will supply all back numbers up to August 1st, if the stock holds out, at the regular price of 10 cents each, postpaid. After that we shall be obliged to charge 15 cents each for all numbers more than sixty days old. We have been frequently asked why not reprint from time to time. For the reason that a small edition of such a printing as THE GARDEN MAGAZINE would cost from 50 cents to \$1 a copy.

BINDING CASES

for holding a year's number will be sent postpaid on receipt of 75 cents. May we again urge all our readers to preserve their files complete before it is too late?

BINDING FOR VOLUME I. READY

This issue of THE GARDEN MAGAZINE closes the first volume. An index will be ready July 1st and is free on request. Numbers returned in good condition will be bound for 75 cents. Express must be paid by subscriber. Cases for binding, which can be used by local binder and save express and delay, 50 cents postpaid.

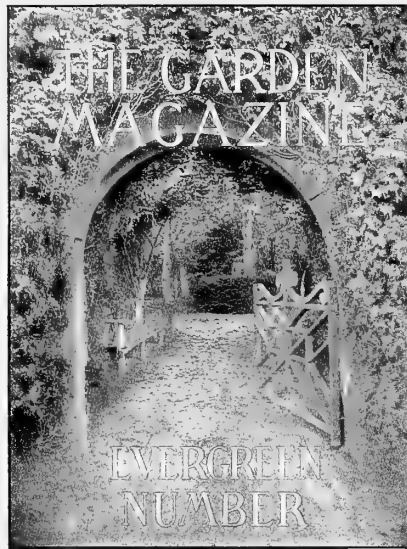
MAGAZINE SUPPLIES

Almost every month we run out of magazines because our readers rely on getting their numbers late in the month. From the newsstands the supply has been exhausted regularly month after month. If THE GARDEN MAGAZINE is worth anything, it is worth the subscription price, \$1 a year. If you have seen a copy now and then and liked it, would it not be well for you to send us a dollar for a year's subscription? More people subscribed in the month of May than in any month since the magazine started.

FALL PLANTING NUMBER

The October issue, which will be published September 15th, will be devoted to fall planting, as the April number was devoted to spring planting. More and more expert gardeners plant in the fall. The spring sea-

son is one of excessive activity, and it is difficult to do one's spring work and be in time to get the best results. Hardy plants and bulbs put carefully into the ground in the fall are ready to take advantage of the early spring season, and get vastly better results. If the human mind takes its chief pleasure in



Cover for the August number

anticipation, surely fall planting must become the most popular form of gardening, as it should be.

CYCLOPEDIA OF AMERICAN HORTICULTURE

We are at work on the new edition of Professor Bailey's "Cyclopedia of American Horticulture." It will be ready about September 1st, with many additions, a new Key to the Vegetable Kingdom, which is included in no other book of this kind, and a host of beautiful new full-page illustrations. It will be complete in six great volumes. To people who will give their orders in advance of printing, to enable us to enlarge the first edition printing order, we will make special terms. You are invited to send for particulars, as every reader of THE GARDEN MAGAZINE really needs this great work.

THE EVERGREEN NUMBER

The August issue of THE GARDEN MAGAZINE will be devoted largely to evergreens. Our gardeners are cultivating and perfecting our evergreens and growing them so well and cheaply that they are yearly increasing in popularity. Here are some of the subjects treated:

- The Culture of Evergreens.
- Evergreens for Special Purposes.
- Evergreens for Wind-breaks, Hedges and Screens.
- The Best Spruces.
- Transplanting Large Evergreens in August.
- The Retinospora Puzzle Solved.
- Evergreen Shrubs and Dwarf Trees.
- Decorative Conifers.
- Broad-leaved Evergreens.

This Evergreen issue follows out the plan we had in mind when the magazine was begun of having four special issues which should be manuals of lasting importance and value—the Spring and Autumn Planting numbers, the Christmas number, which will take the garden indoors, and finally the Evergreen number.

GARDEN BOOKS

The list of books which we publish, and which every garden lover will enjoy, include:

- How to Make a Vegetable Garden, by E. L. Fullerton, \$2.
- How to Make a Flower Garden, \$1, net.
- Roses, and How to Grow Them, \$1, net.
- Our Native Orchids, a book left unpublished by William Hamilton Gibson, \$1.35, net.
- How to Keep Bees, by Mrs. A. B. Comstock, \$1, net.
- First Book of Farming, by C. L. Goodrich, \$2, net.

NATURE CLUBS

In connection with the "Nature Library," and to extend the usefulness of that unique set, we have inaugurated a series of Nature Leaflets, published every other month. These should prove invaluable to the thousands of people all over the country who have gone far enough in their study of birds and flowers and insects, and so on, to feel the need of the stimulus that comes from organized effort along these lines. These leaflets, prepared by Mrs. Anna Botsford Comstock, tell just how to form and run a Nature Club, and give definite programs for meetings and excursions in the special months of issue. The June-July one, for instance, tells suggestively of the study of wild roses, the oriole, the woodchuck, the tiger swallowtail butterfly, and so on.

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Vol. I.—No. 6
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JULY, 1905

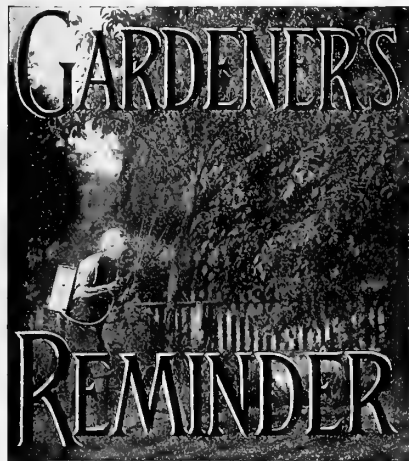
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Wilhelm Miller, Editor *Cover design by Henry Troth* *Doubleday, Page & Company, 133-137 East 16th St., New York*

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A Surprising Notion

DID it ever occur to you that you might own a little greenhouse? Isn't it astonishing what can be done for \$500? What a lot of pleasure the owner of that snug little outfit on page 282 must have all winter when there is nothing growing outdoors!

Which would you rather have—a greenhouse or a piano? They cost about the same. Shall we confess that we aren't smart enough to have both? Work harder and rest harder. Why think of a greenhouse on June 15th? You want a week to convince your wife, two weeks for the plans, and a month to execute them—in order to get things started in time for a Christmas flower show.

Five Stimulating Thoughts

I. THE ONLY WAY TO KEEP AHEAD

Hire extra help in hot weather! It is false economy to postpone this question. Home-grown vegetables are not, as a rule, cheaper than the grocer's. The only point in a garden is to have things better than you can buy. You cannot trust yourself to do the hard manual labor in hot weather. Hire an ignorant man to do the routine work of July—hoeing, weeding, thinning and watering. Have you ever known the joys of being ahead and keeping ahead? Perhaps not in your business, but you can do it in the garden. It is the prettiest game there is.

II. MASTERING SUCCESSION CROPS

"There are no seeds to plant in July." Everybody will tell you this offhand. They are the folks who have commonplace gardens.

There are nineteen vegetables worth planting in July: Beans, early peas, corn, endive, cucumber, pumpkin and squash, beets, carrots, corn salad, cress, gherkin, kale, kohlrabi, lettuce, nasturtium, okra, white French turnip and rutabaga.

As fast as crops mature put in something else. Do not waste a day. Read the article on page 283, tell your man what to do and your garden will be a wonder in September and October, when most gardens "peter out."

III. MASTERING THE INSECTS

Most gardeners distinguish two kinds of insects—"bugs" and "worms"—and their only thought is to kill. Wherefore they are a purblind set, miss a lot of fun and have ordinary vegetables. If you hire a man

you can study the life histories of every creature in the garden and your eyes will be opened to a wonder-world. Read pages 68, 22, 284; and you will have your insect problems solved before your neighbor knows what is eating up his garden.

IV. MASTERING TOOLS AND FERTILIZERS

You can get thirty cents' worth of work out of a man whom you pay fifteen cents an hour by supplying him with a wheel hoe. Is he wasting your time with poor tools for hoeing, weeding, thinning and watering? Read those Fullertonaceous schemes for fooling the drought and fattening tomatoes on page 276.

Is your garden backward? If it is not a great success right now you want to get a dollar's worth of fertilizer to-day. Or, better still, read page 236 (June), bless the writer and act quickly.

V. A GARDEN DIARY WORTH WHILE

Every spring a million garden diaries are started. They all quit in hot weather. That is because dates aren't the main thing. Annals are the duller part of history.

Why not start on a new principle—study some one thing worth while each month. Visit the best collection you can and note the best varieties in some one group—e. g., peonies, German iris, sweet peas, Japan iris, lilies, larkspurs, hollyhocks, rhododendrons, water lilies, plums or cherries.

SOMETHING TO ENJOY

Examine the yucca flowers at night for the little white moth, without whose help it would be impossible for the yuccas to make seed.

Water Gardens for Everybody—By Thomas McAdam New Jersey

SOME POPULAR FALLACIES EXPLODED—MAKING AN AQUATIC BASIN THAT WILL NOT LEAK—FIFTEEN DISTINCT KINDS OF WATER GARDENING—THE APPROPRIATE VARIETIES OF PLANTS FOR EACH

THE main item of cost in a water-lily garden is the pond. People will persist in thinking that there must be something mysterious about it—as if it were electrical or dangerous. There is nothing occult about digging dirt or mixing Portland cement.



342. A nature-like water garden in the most crowded city in America. How small a space is necessary to make a picture of perfect wildness!

If you are willing to do all the work yourself you may have two good-sized water-lily plants (to say nothing of iris, etc.) growing in an 8 x 12 clay-bottom pool at a cost of two or three dollars, whereas your neighbor who hires everything done will have spent twenty-five or thirty dollars.

POPULAR FALLACIES ABOUT WATER LILIES

That it costs a fortune to cultivate them.

That you must have running water.

That they must all have artificial heat.

That they need deep water.

That they are difficult to raise.

That they are a menace to health.

That the natural soil of streams is best for them.

There are thousands of people who can make an artificial pond with little cost beyond that of excavation because the soil will hold water or because they have water enough and to spare. But if water costs money or the bottom leaks, the water garden is a sure disturber of domestic peace.

THE TWO KINDS OF ARTIFICIAL POND

There are two kinds of water-tight bottoms for basins of aquatic plants—cement and clay—and the latter is not cheaper unless the clay costs nothing and the hauling can be done by one's own teams. It is rarely safe to have this clay layer less than a foot thick. Every bit of it must be tamped, while wet, and it is best to ram it every time the weather is favorable for a period of three or four weeks. If horses are allowed to get on it they may break through the crust and cause embarrassing leaks. There is always a contractor in one's neighborhood who will estimate without charge the cost of excavation, and usually, too, some one who can estimate brick work. The ideal pond, so far as avoiding trouble is concerned, is one with a cement bottom, and if you have no gravel or native stone on the place with which to make a four-inch layer of concrete, you should figure on brick. Whatever the concrete, it has to be faced with an inch layer of Portland cement. If there is danger that all the water will freeze solid, the masonry must be protected from the cracking in winter by six inches or more of litter, such as autumn leaves, or any other non-conducting material. Water-lily roots must never be allowed to freeze. It is safe to construct a twenty-five dollar water garden with the aid of the free booklets on water-lily culture given by dealers.

Two of the most surprising features of water-lily culture are the shallowness of the water and the artificial character of the soil. Three feet is deep enough for the centre of a pond and twelve to eighteen inches is the standard depth for the larger part



345. A country gentleman's water garden, such as anyone may have by transforming a mudhole or mosquito-breeding swamp. Goldfish eat the wrigglers

of the basin. The excavation must be deeper than this, however, because of the water-tight layer and the six-inch stratum of soil in which the plants are to grow. The water should be shallow because you will want to wade in with hip boots on, in order to set out new plants, check those that are too rampant, cut flowers and gather seeds. If the pond is less than twelve feet in diameter you can simply lay a plank across whenever it is necessary to perform any of the operations just mentioned.

A SINGULAR FACT ABOUT SOIL

As to soil, it doesn't pay to imitate nature. One would suppose that muck and autumn leaves would be the proper thing, but there



343. Lotus can be naturalized on a large scale in the latitude of New York if the water does not freeze solid. The roots can be covered with autumn leaves. They will not freeze under a foot of running water



344. Part of a greenhouse water garden, showing the brilliant lemon-yellow water poppy (*Limnorcharis Humboldtii*), with flowers about three inches across. One of the best minor aquatics.



346. *Victoria regia*, with its wonderful upturned leaf margins. A man can sometimes stand on a leaf without sinking it. Grown in the Missouri Botanical Garden, St. Louis, without artificial heat



347. A VICTORIA GROWN OUTDOORS WITHOUT ARTIFICIAL HEAT

This is Tricker's Victoria (*V. Cruziana*), a species native to Paraguay, 27° S. lat. It is almost hardy at Philadelphia, where the plants sometimes start up in spring from seeds dropped by the plant the autumn before. Grown by Mr. F. E. Carr, West Park, Ohio. This plant had fifty blossoms lasting forty-eight days without a misse



348. A grassy margin is always pleasanter than the hard, white, unnatural line of raised cement with which so many people ruin the whole effect of their water gardens. In both pictures on this page the monotonous shore line could be made highly interesting by a succession of striking plants, like the giant reed, through which one would get glimpses of the water plants

is little plant food in either, and the standard soil for water lilies is two parts of good rich loam to one of well-decomposed manure. For the best results this material should be composted the autumn before it is wanted. Since a muddy pool is a nasty and often a slimy and bad-smelling thing, it is best to cover the soil with an inch of sand so as to keep the water clear and sweet. The most

scientific way is to grow each plant in a box three or four feet square and a foot deep. Then you control conditions.

One of the commonest mistakes is to set out too many plants. Ten of the tender water lilies will cover a thousand square feet—an area twenty by fifty. A single plant of any of the night-blooming species will measure twelve feet across.



349. At the height of the season, when the surface is nearly covered by lily pads and the leaves crowd so close that some are forced a few inches above the surface. The tall plants are the Indian lotus, everywhere called the Egyptian lotus. This error is now too firmly fixed to be easily displaced

WHEN AND HOW TO PLANT

Hardy water lilies may be planted any time from the first of April till the first of September. If planted early they will bloom the first year. Lotus and the tender water lilies are best planted in June, or whenever the conditions are favorable for starting into growth at once. They have to be started indoors and grown under water in pots, from which it is easy to transplant them. The roots of hardy kinds have to be pressed firmly into the soil and a brick must be put on each root to hold it down until it anchors itself. It is sometimes more convenient to plant them in old baskets that you do not care to keep. Fill these with soil and sink the whole thing under water.

RECIPE FOR A LOUD WATER GARDEN

Make a large, circular basin with a conspicuous, elevated cement rim. In the centre, place a \$200 iron dolphin which spouts water from many pores. Start a colony of dazzling yellow water poppies in close proximity to a large clump of purple Japan iris. Punctuate the lily pods with numerous sword-thrusts of variegated sweet flag. Plant three bananas nearby for tropical effect, being careful to select a spot where the wind will whip the leaves to tatters. Border the pond with eulalias, avoiding the green and choosing the striped, checked or Anglomaniac varieties. In front of these make a circle of castor-oil plants and elephant's ears (alternating them), in order to get the public or park effect. Spice with spotted cannas and measly blue ageratum. Garnish with coleus, using no two of the same kind (this will give a brilliant Joseph's-coat effect), and serve piping hot with mosquito trimmings.

THE BEST VARIETIES

The best water lilies for general planting are Marliac's hybrids because of the number and size of the flowers. Any improvements on them are likely to be new and high-priced. The most distinct colors are white, flesh pink, canary yellow and deep rose; known to nurserymen as *N. Marliacea*, vars. *albida*, *carnea*, *chromatella* and *rosea*. No collection is worth mentioning that does not contain these.

The best for small basins and for tubs are Laydeker's hybrids because they require less room than the Marliac hybrids. The flowers are smaller—two or three inches across. The favorites are *N. Laydekeri*, var. *rosea*, the first and last to bloom and the most reliable; and var. *lilacea*, which has the fragrance of a tea rose. Other colors are reddish yellow, crimson-magenta and rosy crimson.

Blue water lilies are all tender day bloomers. The best sky-blue kind is *S. Capensis* (six to eight inches across). The biggest flowers are Tricker's big blue (*S. pulcherrima*, pale blue, ten to twelve inches), and the Australian blue (*S. gigantea*, dark blue, shading nearly to white). The best purple is the Zanzibar. The Egyptian and Indian blues (*N. carulea* and *stellata*) are worth growing for their historical interest, but they

have smaller flowers—three to seven inches. Both are pale blue.

The tender night bloomers range from white through pink to red, but lack yellow, blue and purple. They open about 7 or 8 P. M., and the best hybrids do not close until 1 P. M. the next day, so that they are worth growing outdoors. Any business man who is at home only at night and can afford a small greenhouse can get an immense amount of pleasure by growing these indoors. They make a brilliant scene if well lighted. These water lilies are all derived from two species, the Egyptian and the Indian lotus (*Nymphaea Lotus* and *N. rubra*), which can be distinguished only by color, the former being white, the latter red. These two prototypes are worth growing for their art and historical associations, but their flowers are open only from 8 P. M. to 11 A. M., and although they range from five to ten inches in diameter they are generally smaller than the hybrids, which often attain ten to twelve inches. Of these the most famous and oldest is *Nymphaea Devoniensis*, which is still the best pure red variety of this group. At its best a single plant of this has been known to cover two hundred square feet and to bear thirty-six flowers and buds at one time! We now have about thirteen distinct shades between white, pink and dark red, and of all modern hybrids in this group the most popular seems to be *Nymphaea O'Marana*, which often bears flowers a foot or even fifteen inches across and is generally considered the best red water lily of them all.

APPROPRIATE PLANTS FOR FIFTEEN TYPES OF WATER GARDEN

1. For a general collection in an artificial pond—anything except Victorias. Better begin with Marliac's hybrids. Lotus and other rampant kinds should be restrained by masonry.
2. For tubs and for the smallest ponds—Laydeker's hybrids. Others too rampant.
3. For a sunny brookside garden—hardy water lilies and Japan iris.
4. For a large body of water where water lilies may be naturalized on a large scale—the sweet-scented water lily (*N. odorata*), Indian and American lotus.
5. For a bog garden—no water lilies, but splendid colonies of marshmallow, cardinal flower, wild rice, and forget-me-not.
6. For a brook that dries in summer—*N. odorata*, var. *minor* (N. Union). Dam and make a reservoir or water with a hose.
7. For deep water and to be planted by itself, because so rampant—the tuberous water lily.
8. For water that is too cold for other water lilies—Swedish rosy water lily (*N. alba*, var. *rosea*, known to the trade as *N. sphaerocarpa*).
9. For swift-running streams—any hardy water lily that you can anchor down in some way.
10. For the home conservatory—the tender species, particularly the night bloomers, because people who haven't greenhouses can't enjoy these in winter.
11. For the South and California—the



350. The beginning of a brookside garden. The country has thousands of featureless streams that could be made interesting at no expense by starting colonies of native plants. New York Botanical Garden

Victorias and the most tropical water lilies, because the North can never grow them so well, no matter how much money it spends.

12. For the rich man—*Victoria regia*, the most magnificent plant in the vegetable kingdom and the only one worth lavishing money upon for artificial heat in summer.

13. For the brightest men who live in a line with Washington or Philadelphia—Tricker's *Victoria*, the only one that can be

grown outdoors without artificial heat in the Middle States.

14. For curiosity, because the smallest—the pygmy water lily (*N. tetragona*).

15. For a formal garden with fountains and statuary—Heaven only knows. Can they be combined artistically? I should like to make a good-natured challenge to the owners of formal water gardens. If they can produce photographs of successful ones I will recant.



351. Save the wild flowers on the margin! The pond would not be half so pretty with a mere grassy bank. Let the goldenrod, Joe-Pye weed and boneset stay where they belong!

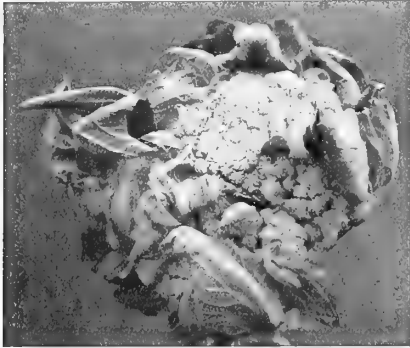
Spinach and Other "Greens"—By Barry Loring Long Island

THE BEST "POTHERBS" AND HOW TO GROW, COOK AND SERVE THEM—THE CABBAGE TRIBE AND HOW TO TAME IT—HOW THE SAME HERB CAN BE MADE COARSE AND RANK OR TENDER AND DELICATE

Photographs by H. B. FULLERTON

I REMEMBER the astonishment of one of our city friends when I showed him some spinach in our garden. "Why, I thought any old leaves that you cook were called spinach."

"Indeed not," said I. "There is spinach and spinach, and the very best I ever tasted is called prickly." Both the prickly and



352. Broccoli is a late, hardy cauliflower. Sown in April it is ready to cut for October

the New Zealand varieties grew in our garden last summer. They differ widely, and the latter is not a true spinach. There are two seasons in which to gather this vegetable—one is the early summer and the other the early spring. For the early crop the seed is sown as soon as possible in the spring and fed well with nitrate. The New Zealand spinach takes the place for summer use, and a late crop of prickly (so called because of its seed) is secured by sowing late in summer. Spinach is prepared for table by thorough washing in cold water and packing closely in a covered kettle, heating slowly until the juices are started, then boiling hard for an hour. A little sorrel cooked with it is much liked by some people; it obviates the necessity of adding vinegar at the table and is a softer acid.

For very early spring use the seed should be sown in August or September. When freezing weather comes it should be protected with several inches of hay, and then the leaves will surely start to work at the very earliest sign of spring.

If it happens that more important matters prevent your making the fall sowing of spinach seed, you may, if you have a partially protected border, plant them in February.

The New Zealand spinach was planted the same time as the prickly—April 25th—after the seeds had been soaked over night in warm water. The seedlings came up fifteen days later, and the first crop was gathered by thinning, June 21st. As the prickly was gathered June 7th, this variety made a very good companion crop to fill in gaps.

A distinct variety of beet leaves, eaten and boiled as greens, is called Swiss chard, though some people use the leaves of the red table beet in the same way. Both are excellent and popular in the country. The general culture is just like that of beets. Sown in drills the thinnings may be used as the season progresses—the whole plantlet is boiled. Beet tops make an excellent substitute for spinach at a time when the genuine article is not to be depended upon. The Swiss chard has a pale yellowish green leaf, which is pulled off and successive crops become available.

PLEBEIAN AND PATRICIAN CABBAGE

The cabbage and its relations comprise a remarkable group of every-day vegetables.



353. Result of tying up cauliflower when wet. Rot starts and the head is ruined

In the supply of green vegetables for boiling, one member or other of this great family is always the mainstay at any season of the year.

The number of cabbages consumed in one year by the population of a small corner of our great country is appalling. A crate of cabbage holds about seventy-five heads. Thousands of tons are used up in and around a great city like New York. And yet the cabbage is not a popular garden vegetable. People seldom give it room, presumably because it can be bought for such a small sum. But I shall never forget my surprise when I tasted the first cabbage out of our own garden, plucked and served at once. It did not seem possible that there could

be such a difference of flavor and crispness between the home-grown and store-bought heads. If you want very early cabbage plant the seeds in the hotbed in February. If you want early cabbage the seed may be planted in a sheltered and well-prepared seed bed in the garden at the end of March, and the seedlings will be ready to set in the garden in May. Late varieties should have the seed planted about the middle of June. These seedlings will be ready to go into their allotted place in the garden in July, making fine, large cabbages for November. If the seed be sown out of doors the drills should be made twelve inches apart. One foot of drill will probably give you fifteen to twenty seedlings. The late varieties are set out in July, in places left vacant by the matured crops of lettuce, radishes, early peas, etc.

THE VARIETIES OF CABBAGE

There are three distinct varieties—red, smooth and wrinkled. The smooth are those usually grown, being larger and heavier than the wrinkled variety, although this last (Savoy) is extremely delicate in flavor. They are gross feeders, need plenty of manure, and a little chicken-house refuse will suit them. Transplant them on a cloudy day, if possible, but if fortune does not favor wait until toward evening, and shade the plantlets the next day, without fail, after which they will be pretty well able to take care of themselves.

Their enemies are cabbage-worm, loopers, flea-beetle, black-rot and club-root. Arsenical poison should be used for the first two. Spray either with Bordeaux mixture and Paris



354. As soon as the flower forms draw the leaves together and tie or fasten by a skewer. This keeps the head white, greatly improving the appearance

green, or with Paris green and flour, sprinkled dry, or with the resin and lime mixture. The last is by far the best. Club-root must be starved out of the soil, therefore you should not attempt to grow cabbage or cauliflower for two years or more, if this disease develops in your garden, the only remedy being the evil-smelling carbon bisulphide. Black-rot starts on the outer leaves, turning them yellow, and eats its way into the heart of the plant. Destroy the leaves by fire as soon as you discover that they have been attacked. If the rot has reached the stem it is wiser to destroy the whole plant. Should this unpleasantness develop among your cabbages examine them carefully before storing for winter. Black threads in the fleshy part of the outer leaves indicate its presence, so beware!

The head is ripe for culinary uses when it is large and firm. Soft heads, that have the leaves folded so loosely that they yield when you press them, may be used for the winter's supply, as they will harden in storage. This hardening is really an expansive growth of the inner leaves to fill up the space. Cabbages stand pretty cold weather, so you need not think about storing them until Election Day comes. Then, if you wish to keep them only a short while, say until Christmas, they may be taken out of the ground, placed all in a clump with the roots to the centre and covered with hay, straw or litter. If you wish to keep them longer, or to be more sure of their safety, dig a trench one foot deep, cut off the loose outside leaves of the cabbage, put them in the trench, heads down and close together, cover them over with earth, and, as the weather grows colder, pile on salt hay, straw or litter. If you wish to be very nice about it, plan to keep the heads clean, first line the trench with salt hay, put a little over the plants, and then pile on the earth. Cabbages would much rather be too cold than too warm, so do not start to cover them either too early or too heavily.

THE BEST GREENS FOR HOT CLIMATES

Georgia collards are very closely related to cabbage. The leaf is nearly the same as the outer leaves of a cabbage, but no head is formed. It is raised a great deal in the South, where the climate is too warm for heading cabbage, and it is always boiled. The flavor is the same as that of cabbage, but it should be cooked as you would cook kale. Very little of it is raised in the North, as cabbage takes its place, though the seed can be planted and the seedlings cultivated like those of late cabbage. Seed was sown in my garden June 23d, and within four weeks the plants were large enough to be set out one foot apart in the rows. They make a pretty bit of green in the fall garden. Its enemy is the cabbage-worm, but no serious harm was done to my plants, as the young, tender leaves which we used came up after the pest had been fairly well banished. It seems to stand frost well.

BRUSSELS SPROUTS, A REFINED AND DIMINUTIVE CABBAGE

Brussels sprouts are miniature cabbages formed at the base of each leaf along the



355. Brussels sprouts are little cabbages produced all along the stem, at the base of each leaf. They have a very delicate flavor and should be more commonly grown in the home garden. A touch of frost improves the flavor. Grown like late cabbage, but occupy less space. A vegetable the amateur should grow

stalk leaf, and edible when about two inches in diameter. The seed should be sown like late cabbage, in June for our Northern states, as the vegetable is covered during the late fall and winter. Light freezing will not hurt the plant, and it frequently is left standing until well into the winter; indeed, it survives the winter without much protection. The plants may be set one foot apart, perhaps even a little closer, for they grow tall, rather than stout. They require rich earth, and must make a rapid growth to attain their best in flavor and texture.

It is a vegetable seldom seen except in the markets, but it is much prized by investigating natures who have a liking for cabbage. A good method of preparation for the table is as follows: After trimming the sprouts neatly, place them in cold water for an hour, then throw into boiling salt water, and cook

gently until tender (about thirty minutes). They are a bright green when done, and if they come out a faded color they have been overcooked.

CAULIFLOWER THE MOST DELICATELY FLAVORED MEMBER OF THE CABBAGE TRIBE

Cauliflower is first cousin to the cabbage, requiring the same rich ground and other conditions as for late cabbage. Cauliflower requires cool weather and plenty of moisture. The seed should be sown in April, as soon as the ground can be gotten into good condition, and the young plants transplanted to the garden in June, setting them two feet apart. As soon as the plants appear above ground watch and forestall the cabbage-worm by keeping the plants well sprayed with Bordeaux. It would pay to make the earth somewhat richer for cauliflower before setting them in the garden than for cabbage;



356. Snow-covered kale or borecole that garnished our Christmas turkey. A non-heading cabbage which should be grown for winter greens. Is improved in flavor by having a touch of frost



357. Sea kale is not a real kale. It is forced for winter use like rhubarb. Has bitter taste

and a mulch of hay, straw or lawn clippings helps greatly to conserve the soil moisture. When the heads begin to form the only way to discover them is to part the central leaves and reveal the small white flower bud in the centre. When the small leaves surrounding this blossom are parted, and the flower is visible without search, the time is ripe to draw up the outside leaves and tie them together at the top. When the proper time has elapsed for the plant to have reached maturity, which is easily seen by the full roundness of the leaf case, the heads are cut off and the leaves surrounding the flower trimmed down to display the white flower clumps. The plant stalks should then be pulled up and burned, for it is not wise to run any risk of harboring insects or diseases.

BROCCOLI: THE JOY OF THE ENGLISH GARDENER

Broccoli is a late variety of cauliflower, with heads not so fine and florets more distinctly separated. Little groups here and there throughout the head are surrounded by tiny leaves. The plant is taller and more robust than the cauliflower, but the flavor is the same. The seeds are sown in April and the plants transplanted to the garden in June. The flowers will be ready to gather in October, and are very welcome at the season's end. Some flowers of this type are also purple, though they become pinkish when cooked. Extreme care should be taken in preparing these vegetables, for when overcooked they lose their flavor and



358. Round seeded spinach makes a more compact tuft of leaves than the prickly seeded spinach. Giant Virolay is the best variety of this type to grow

fall to pieces. Wash thoroughly, trim off the outside leaves, tie it in cheesecloth and drop it gently into a large pot with enough boiling salted water to cover. Boil a small one twenty minutes.

KALE

Kale, a cabbage without a head, is cultivated in about the same way. The plants are very beautiful, especially those with a purple tinge in the stem and midrib, and a variety we call the maidenhair fern, whose leaf is symmetrical and so deeply indented that certain lights bring out the fancied resemblance. For cooking, the leaves are gathered and placed in a tightly covered



359. Prickly spinach has spiny seeds and soon runs to flower. It is very productive and is a good crop for early spring. For hot weather plant New Zealand spinach, which is an excellent substitute

kettle to draw the juices out; then boiled until tender and served with vinegar. The flavor is very much the same as cabbage, though the texture is slightly smoother. For early spring use the seed should be sown in September, one inch deep, transplanted to one foot apart, and protected slightly during the winter. I sowed seeds of Siberian kale toward the end of April, and had plants large enough to be cooked early in June.

The plant endures the winter and produces greens in the early spring again. There are seven or eight varieties of biennial kale offered by the seedsmen, besides sea kale (a totally different thing), which is a perennial.

Sea kale resembles asparagus as a foodstuff, since the young blanched shoots are



360. The kales are ornamental as well as useful. There are dwarf, tall and variegated kinds. They are more delicate in flavor than the hearting cabbage

used in the early spring. It may be propagated by seed, or by division of root, and it can be forced for winter, like rhubarb. Bank loose earth upon the crown in spring, and cut the young growths when they appear. On the other hand, the roots may be lifted, placed in moist soil and set in the dark, where the young shoots will appear and grow white and tender. A moist atmosphere must be maintained, and a mushroom cellar is a capital place in which to blanch or force sea kale.

BITTER DANDELIONS AND DANDELIONS WORTH GROWING

Dandelion, a weed on our lawn, is a welcome salad plant and is also used boiled as greens.

The Arlington variety is superior to the common, being broader, larger, and handsomer than the large leaved; the French is the most finely cut. For boiling greens cut the leaves off just where they come out of the ground, wash thoroughly and pull apart; put into a tightly covered kettle, heat slowly, then boil until tender; drain in the colander, chop finely, salt, and serve with vinegar. The slow heating draws out the water that is in the plant, while quick heating would burn them, as well as the kettle, before the plant liquid had a chance to escape.

In the West, the roots are dried and, when mixed with roasted wheat or barley, make "poor man's coffee." The dried roots are also used medicinally. I think dandelion is a perennial, or "never-ending ennial," when it grows as a weed on your lawn.



361. Dandelion is preferred by some as a boiled green. For table use grow new varieties in the garden

Shall I Till, Pasture, or Mulch the Orchard?—By S. W. Fletcher

Cornell University

Photographs by the author, from the Horticultural Department of Cornell University, and J. E. Rice

WHEN the trees are planted, and every year thereafter, the home orchardist must decide between tillage, substitutes for tillage, and sod. Which shall it be? A satisfactory solution of the problem means food and drink to the trees. The tillage



362. The row on the left was tilled and the other not tilled. Otherwise they were treated alike. Does it pay to till? It certainly did in this case

problem is the most important one that the home fruit grower is called upon to solve. Neglect of tillage and injudicious tillage ruin more fruit trees than all their insect pests, all their diseases, and all butcher pruning. This is a fact, readily proven by observation, not merely an opinion.

HOW TILLAGE SAVES SOIL MOISTURE

Everybody can see that plowing and harrowing the soil prepare it for the plants, and that frequent stirrings thereafter kill the weeds that would rob the plants of food



363. Thriving, bearing, happy in well-tilled land. It usually pays to till trees as well as it does to till vegetables—and for the same reasons

and drink. But stirring the soil does far more good than killing weeds. It saves moisture; it makes a "soil mulch." Beneath the mulch of decaying leaves and branches in the forest you will find moist soil, even in the driest season. Beneath the strawy manure between your rows of strawberries the soil is moist. In drought, you hunt for angleworms beneath the chips of the woodpile—it is moist there. Lift up a board or a large flat stone and notice the moist soil beneath. All these are mulches. Anything that is put between the soil and the air, and so checks the evaporation of water from the soil, is a mulch.

One of the best mulches, and usually the cheapest, is the soil mulch. A surface layer of soil, made loose and dry by frequent stirring, keeps the soil moisture from escaping, like the leaves, the straw, the stones. Prove this for yourself during a "dry spell" by digging in tilled ground and in untilled ground. This moisture the plants need, especially fruit plants. Hence it is sometimes necessary to till, even though there is not a weed in sight—to save water. Covering the soil all over with rocks or boards, or leaves, chips, straw would accomplish the same purpose.

Tillage also makes the ground more fertile. Much of the plant food in the soil is like the nutriment in flour to you and me. It is not in digestible and palatable form and so it is useless to us for the time being. Tillage lets in the air, which acts upon this raw plant food—"cooks" it, so to speak—and makes it palatable to the plant. It also puts the soil in better texture, making it more mellow and finer, so that the plants have more feeding area. Hence it is a common expression, and a true one, that tilling a soil may be equivalent to fertilizing it.

The desirability of tilling fruit trees in general calls for no more convincing proof than that which any observing man may gather for himself by examining a hundred or more orchards in almost any section of the country. Usually, but not always, it is the owner of the sod orchard who says, "fruit growing doesn't pay." Usually, but not always, it will be noticed that the sod orchard drops its leaves during the summer drought, has the most windfalls, harbors the most pests, nourishes the most "fungus." Usually, but not always, he will find that the back-yard trees in sod are not as thrifty, and do not produce as high-class fruit as the back-yard trees that are scratched under by harrows or by hens. Facts like these establish beyond dispute the general desirability of tilling fruit trees. There are some cases, however, where equivalent results can be secured more advantageously by other means; cases where tillage is unnecessary; and others where tillage is positively harmful. "Tillage of fruit trees pays," is the general rule, applicable in most instances. "Sometimes sodding, pasturing or mulching fruit trees

is better or is more expedient than tillage" is the exception to the rule.

SOD ORCHARDS ON RICH, MOIST LAND

When the soil of the home orchard is exceptionally rich, and quite moist, the trees



364. A typical sod orchard of the old school. It is pastured with cattle. Half the trees have died and the rest are unprofitable

may sometimes be left in sod. Especially on bottom lands and alluvial soils. The chief reasons for tilling an orchard are to supply moisture and to increase the fertility of the soil. If the soil be rich, and sufficiently moist at all times, there may be no need of tillage for these two purposes. In fact, tillage may be harmful in such a case because it may supply the trees with more moisture and more food than they need. If the trees are productive and vigorous without tillage do not disturb them. Keep such trees in sod and pasture or mulch them. It is rarely advisable, however, to leave fruit trees permanently in sod, even under these conditions. Usually it is best to plow and till the land for one season every two to



365. A young apple orchard that has been seeded to grain because it is growing too fast. The grain will check this rampant growth



366. Pasturing the home orchard with sheep is often one of the best substitutes for tillage in strong, solid or hilly land. The sheep crop the herbage close, eat wormy and diseased windfalls, and fertilize the trees

five years, and then put it in sod again; especially after the trees get into bearing and grow less luxuriantly. This sweetens the soil, puts it in better texture, lets in the air, promotes germ life, and sets at work all other agencies that make the soil congenial to plants.

TREES ON STEEP OR ROCKY LAND

Fruit trees may occasionally be left in sod when they are on very rocky or very steep land. It is not wise for the amateur to plant on such a site, if he can avoid it. If he cannot it is certain that a home orchard under such conditions is far better than none at all. Care should be taken to keep the

ground stirred for a few feet around the young trees during the first two or three seasons at least.

CARE OF TREES IN THE YARD

A third reason for keeping the home fruit trees in sod is that of expediency. The home grounds may be so small that no definite area can be set aside for the orchard; the fruit trees must be in the yard and a part of the general planting. From my point of view, fruit enthusiast though I am, a lawn about the house contributes far more to the home than a few fruit trees can ever do. Do not, therefore, needlessly sacrifice the lawn to the trees; plant them right in the

sod if necessary. You may expect them to be somewhat less satisfactory than if they were tilled, and you should plan to manure them highly and perhaps water them in dry weather; but all this trouble is better than having bare, ugly tilled land near the house. Yet there are thousands who plant fruit trees directly in front of the house and give up all the pleasures of a lawn for a few bushels of fruit. The fruit can be bought, but the lawn cannot. Save the lawn, the fruit trees on the side or in back, stir up a little circle of soil around them when they are young, give them liberal dressings of manure, and a drink in thirsty weather.

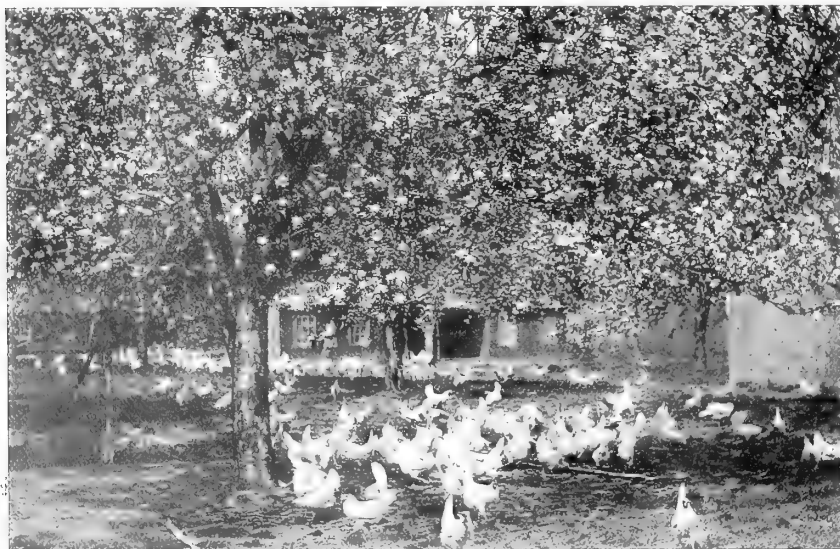
SODDING TO CHECK GROWTH

The three cases noted above are, in my opinion, the only ones which call for a more or less permanent sod in the home orchard. But there are cases where fruit trees can be sodded temporarily to advantage; when they are growing too rapidly, for instance, because of excessive fertilizing or heavy winter pruning, or from other causes. The permanent remedy for this condition, naturally, is to fertilize more judiciously, or prune lightly, perhaps to summer prune a year or two. But sodding the trees may be used as a temporary corrective until the equilibrium is restored. To illustrate: If your tilled pear trees are growing luxuriantly, and hence are in danger of being attacked by blight, it might be wise to sod the orchard a year or two, or at least to neglect tillage until the trees make a less vigorous growth.

PASTURE WITH CATTLE, HOGS, SHEEP, OR HENS

Assuming that the home orchard is to be left in sod, there are still other questions to be settled. The grass may be cut for hay; the orchard may be pastured with cattle, hogs, sheep, or hens; it may be allowed to fall to the ground where it grows, and return to the soil; it may be cut and either allowed to lie where it falls or gathered up and placed around the trees. Each method is successful in some places. Cutting orchard grass for hay, however, is rarely profitable. The grass sucks tons of moisture and stores of plant food from the soil. If the sod is pastured the plant food is mostly restored to it in the droppings of the animals, and less moisture is lost because the grass leaves do not get large. If the grass is cut for hay, however, the plant food in it is carted away, and the soil is dried out by evaporation from an immense leaf surface.

Cow pasturage of the orchard is pretty generally condemned. It is undoubtedly good for the cows, especially in the season of windfalls, but hard on the trees. The ends of the branches are sure to be browsed more or less and the compacting of soil around the trees by the animals is often very injurious. Hog pasturage is much better. Hogs do carry on a sort of makeshift tillage, for selfish ends, and make what passes with some people for a soil mulch. Of course it does some good, but it is not to be compared with the mulch of horse-leg tillage for saving soil moisture. If corn is dropped in crow-bar holes here and there the tillage operations



367. Hens in the home orchard—a happy combination. The scratching is a good substitute for tillage in some cases. The poultry need the range and shade; they help to keep down insects and add fertilizer



368. The soil mulch. The surface layer of loose dry soil keeps the moisture below from escaping. This young tree is getting plenty of water to drink

of the hogs will be more zealously performed. This is expedient, of course, only on a small area. Hog pasturage makes the orchard look unkempt, and should not be tolerated close to the house; but it is often the most expedient method of handling a small home orchard, especially if it is rocky, and the soil is strong.

All things considered, sheep are the best animals to turn into a sod orchard. They graze the grass close, so that little soil moisture is lost by evaporation from the leaves. They do not compact the soil seriously. Their droppings are widely distributed. If the orchard site is hilly the droppings enrich the knolls where the animals cluster at night. Sheep injure the trees but little. Some of the best New York orchards are sheep pastured.

Home orchards pastured with any of these animals secure the advantages of having the wormy or diseased windfalls eaten by the stock, and the droppings enrich the land. However, it would not pay to pasture an orchard for these reasons only. Spraying controls insects and diseases far more cheaply and more effectively than any kind of stock pasturing, and the orchard can be fertilized more uniformly and more economically from the manure pile, fertilizer bag, and leguminous crop.

Poultry and the home orchard often make an excellent combination. The poultry stir the ground considerably, fertilize it, and take an interest in the solution of the insect problem. There is reciprocity. The fowls need sunshine, shade, a range, scratch bed, grass and grit; the trees need scratching



369. The leaf mulch. The rotting leaves keep the soil moisture from evaporating. Straw and manure do the same; but tillage is usually cheaper

and fertilizing. Poultry seem to be especially valuable in the plum orchard; no curculio playing possum escapes them. Which animal to use for pasturing the home sod orchard is mostly a question of expediency. Before you decide this, however, go over the whole subject again and see if it will not be better to till the orchard, after all.

THE ADVANTAGES OF MULCHING

If a sod orchard is not pastured it should be mulched. The grass may be cut one or more times a season and allowed to fall where it stands, thus mulching the soil. This is preferable to letting the grass grow up and die down. It also helps to keep noxious weeds from gaining a foothold in the sod. Practically all is returned to the soil that was taken from it except the moisture. This method is found to be satisfactory in sod orchards that produce a rather heavy growth of herbage.

The alternative is to gather the cut grass and spread it around the trees. One objection to this is that the feeding roots of a bearing tree are mostly out between the rows, not beneath the branches, so that a mulch around the tree does not help much. Then, again, there is greater likelihood of the trunks being girdled by mice in winter. Where the herbage of sod orchards is scanty this method is often satisfactory. In most cases both are decidedly preferable to taking the grass away for hay.

There is no uniform difference in results between mulching and pasturing. Which practice should be followed, after it has been decided to sod the orchard, depends more on expediency than anything else, except that land may be pastured that is too rough or rocky to be mown for mulching. In all sod orchards that are not on strong soil it must be remembered that more fertilizing will be needed than if they were tilled, since tillage increases fertility.

DO NOT PLANT YOUNG TREES IN SOD

If the man who is about to plant a home orchard is as busy as he ought to be, he will be inclined to give ear to the advocates of mulching and of pasturing. It is so much easier to let a hog root for you than to follow a harrow through switching branches. But wait—there is one more argument. If there is one orchard in a hundred that might profitably be kept in sod when of bearing age, there is not one in a thousand that can profitably be left in sod when the trees are planted. Sod is usually injurious, often ruinous, to young trees. It is a question of moisture more than of food. There are some who claim that the grass actually poisons the soil for the growth of trees, by means of secretions from its roots, but this is not generally accepted. When the trees are well established in the soil, after a few seasons, it may be found best to seed down the orchard; but rarely is it advisable to do so at once. Till the soil for two or three seasons, anyhow; or put in a hoed crop, which will necessitate tillage, not a sown crop, like grain; or at least work up the ground for several feet around the tree. The safest way



370. Keep young trees in tilled ground. Bearing trees may be left in sod sometimes, but not young trees. Sod is usually ruinous to newly planted trees

is to start off with tillage wherever possible, whatever may be the system of orchard management adopted later on.

No man who has seen a thousand or more orchards, and found the neglect of proper tillage so almost universally associated with unsuccessful fruit growing, could help being an advocate of tillage, wherever it is expedient. The actual methods of tilling fruit trees, and associated problems, like cover crops, cannot be discussed here; the object of this article is to present the reasons for and against tillage, and the substitutes.

You may call to mind many sod orchards that bear large crops of good fruit. How do you know that they would not bear bigger crops and finer fruit if tilled? There is only one way to determine that. In solving the tillage problem for yourself be guided, not by my advice, nor the advice of anybody else, but by the conditions of your soil and the growth and fruit-bearing of your trees. Do not till or perform any other orchard operation because it pays in general; do it only when sure that it will pay in your particular case.

If your trees bear well, grow well, and you feel satisfied that they are doing their best, don't disturb them. But if they are not doing well, they are not happy in their environment; something is wrong. What is it? Insects? Diseases? Bad pruning? Starvation? Lack of water? They need a shaking up; and probably there are two or three things out of joint. Carefully study the tillage problem. It is at the foundation of successful fruit growing and is a common stumbling block to the amateur.



371. Hog tillage is shiftless, but does very well in rocky land which cannot be tilled by horse power. The orchard should not be set on the rockiest spot



372. The critical moment in the vegetable garden—the time of drought, when vegetables get fibrous and woody. Which shall it be—weeds and baked dirt, or a wheel hoe, plenty of water, and plenty of first-class vegetables?

Easing the Summer Work—By E. L. Fullerton Long Island

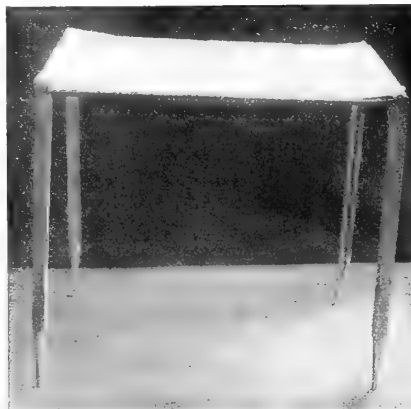
TWO SIMPLE DEVICES FOR SUPPLYING WATER AND LIQUID PLANT FOOD DURING THE PERIOD OF DROUGHT—HOW TO PREVENT VEGETABLES FROM BEING SMALL, TOUGH AND STRINGY IN HOT WEATHER

Photographs by H. B. FULLERTON

THE hot time in the vegetable garden! Who wants to work then? Certainly not the vegetables. Under a too ardent sun they get tough and fibrous. Lettuce turns bitter and promptly bolts to seed. What shall we do this year—shirk the problem and view the same old weed patch, or have plenty of tender, succulent high-flavored vegetables that will make our guests want to come again? The problem is simple. One word tells the whole story—water.

You can't have good tender vegetables if they ever get a check in their growth; and the hot weather is bound to check them unless you give them plenty of water. There are two ways of getting it: First, lay a pipe to the garden or get some hose; second, keep in the ground the moisture that is already in it. This latter means a wheel hoe to be used in the early morning or after sunset. I never did like hoeing in the hot sun with the thermometer at ninety, therefore the wheel hoe suits me.

The maturing beets require plenty of cultivation, and some are just ready to be



373. In hot weather lettuce will get bitter and run to seed. You can do two things: sow endive or black-seeded varieties of lettuce, and screen them

thinned. The surface soil must be kept well broken up and loosened about these youngsters, or their growth will be checked.

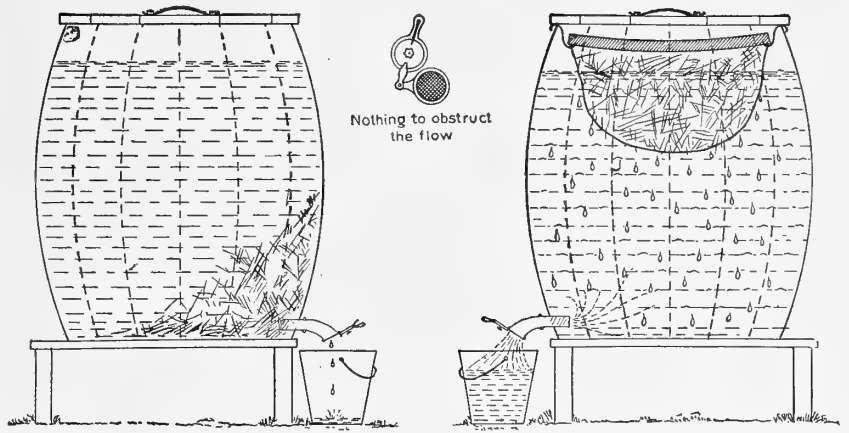
Beans, green pod and wax are in full bearing, and it is time to make the last sowing. When this batch is up, and starting its second leaves, thin them out to make them four inches apart, work in a little nitrate of soda near the roots, but without touching them, in order that the growth may be so marked and vigorous that the hot weather will not affect the blossoms. Work the soil frequently, keep the hoe near the top, so as not to disturb the surface roots, and do this when there is neither rain nor dew on the plant, as moisture is one of the causes of rust, that much dreaded disease of the bean.

Lima beans are running well, and must be topped off when they have reached the limit of their supports, to throw their strength into the pod and bean proper. The season at best is all too short for these plants, and many years and much labor have been

expended to produce a Lima bean that will reach full maturity in our limited duration of semi-tropical weather.

If you want salads that are really worth while give the summer lettuce good care. If you have the Cos varieties draw up the outer leaves and tie them together at the top with raffia, so as to blanch the inner leaves. If you have a tender or cool-weather variety it must be protected from the intense heat with screens of cheesecloth or paper. I raise the black-seeded Simpson for summer.

The black-seeded varieties are much the best for hot-weather planting. But the summer weather is trying to any lettuce. A modification of the direct rays of the sun is sometimes arrived at by planting the summer crop of lettuce in partially shaded parts of the garden, but if this is not possible the amateur can accomplish something by stretching a screen of cheesecloth over the



375. The gardener's stand-by for getting succulent crops in hot weather—a barrel of liquid manure. The old way: If you dump the manure into the barrel it will clog the spigot and you will have to stir it. The new way: Suspend it in a bag at the top and you have the solution ready for use all the time.



374. The falls in the brook beside our garden where a hydraulic ram will be placed

satisfy thirst and hunger at the same time if we give them manure water. One of the secrets of successful melon growing is to provide nitrogen (which is the real food element in manure water) in weak doses, but often. The ends of the main vines are pinched out and lateral shoots are stopped, which helps the fruit to develop and makes it better flavored—sweeter—because the sun gets at it. Then also it economizes room.

Tomatoes are growing gloriously. But don't let them run to vine. Cut out the multitude of thin, weak, spindly shoots that only crowd the strong ones. Let in the daylight, and get larger, better and earlier tomatoes.

The young celery plants as they are set out now will be very grateful for plenty of manure water, as it is difficult to give celery plants either too much to eat or too much to drink.

The root crops have the best of it during these trying times. Carrots, parsnips and salsify need but little care at this time of year, for their large roots are far down below

the surface. Cultivation, which means the keeping down of weeds and helping the circulation of air and moisture, is about all they need.

Potatoes need cultivating, unless you have such an early variety that you are taking in your crop at this time. If you are harvesting them be sure to protect them from the sun. Do your digging on a cloudy day, if you can.

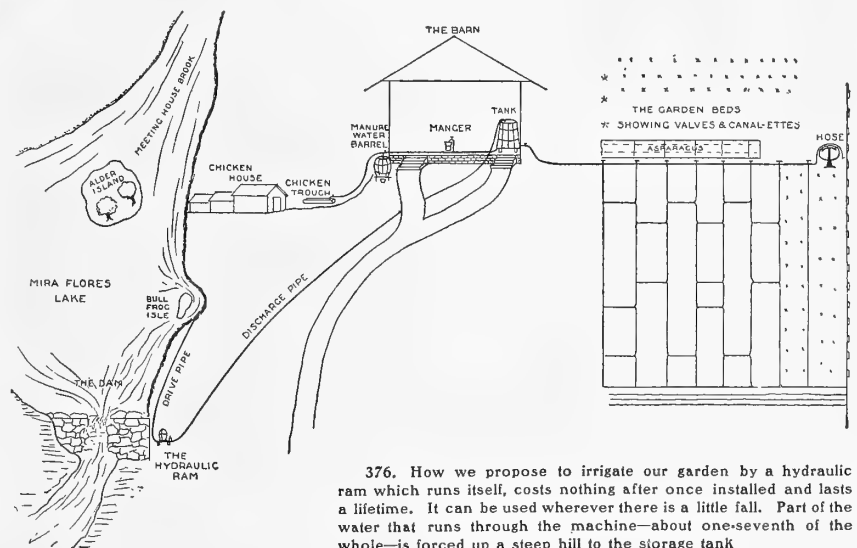
You are surely gathering and enjoying the main crop of corn, but don't neglect the later crop. It needs frequent hoeing to keep it growing fast and strong. Watch for the smut, that uncanny fungus growth, and cut it off as soon as it appears, which it usually does in small knots on the tassel. Burn it and you will be sure the spores are killed. Sow early corn for late crop.

Cultivate onions carefully and draw up the earth about the leeks to blanch them well.

Late cabbages are set out in July, in any vacant spot that the garden affords, so they are dotted around, unless you have had space

lettuce bed, but sufficiently far above to allow a thorough circulation of air. I take laths to make a rectangle about ten by twenty-four inches, and to this tack some very thin unbleached muslin or cheesecloth. Each corner is fastened to an upright piece, about eighteen inches long, sharpened at the lower end, so that these ends can readily be pressed into the soil. The screen will cover two heads of lettuce, and it can either be slanted toward the south (whence comes the greatest and most forceful sunlight) or put in straight. When its duties for the season are over this screen can be easily removed and stacked away till next year.

Squash and melons must have their runners cut off, or they will forget themselves and make a vast amount more of vine than they will of fruit. They are continually begging for a drink of water at this season, for they are lusty drinkers, and we can



376. How we propose to irrigate our garden by a hydraulic ram which runs itself, costs nothing after once installed and lasts a lifetime. It can be used wherever there is a little fall. Part of the water that runs through the machine—about one-seventh of the whole—is forced up a steep hill to the storage tank



377. Semi-tropical vegetables will keep on growing unless stopped. Pinch out the ends of the shoots to force strength into the maturing beans, tomatoes, melons, etc. This insures a full crop

enough to give them dignified rows of their own. Midsummer brings with it the pretty little white butterflies whose young mean destruction to the cabbage, so they must be watched for and promptly attacked, which can be done by dusting on hellebore or some of the special preparations sold for the purpose.

AN AUTOMATIC PUMP THAT RUNS ITSELF
AND WORKS FOR NOTHING

If your garden is supplied with an irrigating system you are in the seventh heaven,

compared with ordinary mortals. Maybe you haven't such a system, but are thinking of installing one. It is wicked not to irrigate the garden if Nature has provided a handy supply of water.

Where there is a fall of water a small hydraulic ram is easily put in at the foot, and it will pump the water into a tank on the first floor of the barn. From the tank a pipe, perforated at intervals, can be run to the various parts of the garden. By turning on the supply from the tank, water will flow from the apertures. The water

will naturally follow the hills and rows, the furrows between them furnishing brooklet beds of easy access and most attractive appearance. Then by digging a small gutter with the hoe in any desired direction the water can be led whither we will.

Another method of irrigation is to have a main line of pipe run down each side of the garden, with short branches fitted with stopcocks, and short lengths of hose arranged at convenient intervals. By turning the stopcock at any portion of the garden you choose that section can be watered with ease. There are innumerable other methods, and each garden makes a special demand.

Do not understand that the entire surface of the garden is to be moistened. That would make the ground puddly, and it would bake quickly. A narrow, shallow ditch should be dug on each side of a row of plants and the water run into these ditches. The water thus immediately reaches the roots of the plants, and as the earth has just been loosened, it soaks down, instead of running away on the surface. The ditches should be watched to see that the water runs their entire length, and is not stopped by lumps or a rise in the land.

It is much wiser to give plenty of water once every few days than a little each day. The latter method keeps the surface moist, and the roots naturally rise for the moisture, so that they are near the surface and will be injured by the heat of the following day. Give enough water to go deep, or else just enough to wash the leaves. The amateur should by preference water at night, for then the moisture has a chance to do its good work before evaporation starts under the heat of the sun's first rays, as it does almost at once when watering is done in the morning.

LIQUID PLANT FOOD WITHOUT EXPENSE

Everyone recognizes the value of manure water for either vegetables or flowers, but very few amateurs bother to maintain a supply always ready. That is the only way to do, however, for rather than mix up a little now and then the manure water is dispensed with. Little and often is the rule to be observed in feeding with manure water. I have devised a little arrangement that gives all the manure water I need and it can be drawn off at any time.

An old creosote paint barrel (a kerosene barrel will do as well) is fitted with a molasses spigot, selected because it will not choke up. In the top of the barrel is a bowl made of sacking and arranged as shown in the sketch. The sacking is fastened to a heavy wire hoop which has loops that catch over the edge of the barrel. The sack or bag filled with fresh manure is suspended in the barrel from the upper rim. The barrel is then filled with water, the cover put on, and in a short time the liquid is ready for use. The barrel can be filled several times before the manure needs renewing. One bucket of this decoction is worth several of plain water.

The advantages of suspending the manure at the top of the barrel are obvious—no obstruction of the spigot.



378. Do not let the crops get old. Pick all you can every day, even if you cannot use them. It will help the others, and you will get more in the end. Give the surplus to your gardenless neighbors

A Garden Worth a Hundred Dollars—By Charles A. Hartley Pomeroy Ohio

A VILLAGE VEGETABLE GARDEN OF THREE-QUARTERS OF AN ACRE—ILLUSTRATED BY PHOTOGRAPHS TAKEN FROM THE SAME SPOT EVERY FORTNIGHT THROUGHOUT THE SEASON

Photographs by H. E. FEIGER

LAST year's garden was the most satisfactory we have ever had. The area was little more than one-third of an acre, which was plowed by a colored man for \$2.25.



379. May 2. The beginnings of the garden. All bare except a few beds in the foreground



380. May 16. Two week later; the onions well ahead. Pea stakes in. Lettuce coming ahead



381. June 3. Things rushing. Beets between the onion beds. Asparagus, beans, tomatoes in evidence



382. June 17. Potatoes in bloom. Tomatoes half way up the stakes. Lettuce, radish and onions in plenty

The dead weeds and other trash were removed for \$3, so that when the garden was ready for planting the total investment amounted to \$5.25. The ground slightly declines from north to south and faces the sun for a good many hours each day.

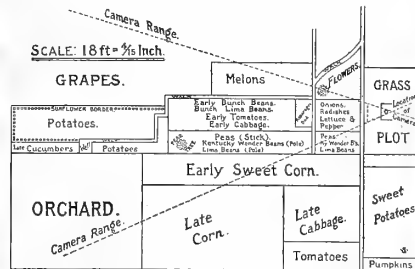
By May 2d we had the garden well in hand.

On May 16th onions and radishes in the foreground were large enough to stand up and claim attention, while two long rows of peas at the lower side are large enough to demand sticking. This was done by stretching three light wires from stout posts and weaving in dry horseweeds for pea stakes. The lathing of the dilapidated chicken yard in the distance of the first view has disappeared! We tore it down, sawed the lath into five-foot lengths, and made bean supports from them. Two wires were stretched from end to end of each row

gave us \$10 over the original cost. A careful account of all the products sold, used, given away, or put away for winter showed our garden was worth \$110 in actual cash.



385. July 23. First dish of lima beans ready. The picture is at close range



383. How the garden is plotted. The dotted lines show the range of the camera in taking the photographs

and the laths fastened to the wires by means of staples. The whole outfit cost an even dollar.

One and a half bushels of potatoes went in at once in the same week with beans, sweet corn, radishes, beets, lettuce, etc., followed by five hundred sweet-potato plants, more corn, cabbage, tomatoes, cucumbers, squashes, muskmelons, watermelons, etc. The total outlay was about \$10.

Our best results came from early potatoes; forty bushels from one and one-half bushels—drilled in eight inches apart with one eye in a piece.

We sold \$20 worth of products, which



386. July 23. Turnips sowed in the early onion beds. Beets and peppers still thin



387. July 23. The lower garden at its best. Corn, cabbage, tomatoes, growing vigorously



384. July 2. Last of the first crops in the beds in the foreground. The full harvest just beginning elsewhere



388. October 11. Vegetables still; turnips and beets in the early onion beds ready to store for winter

Plant Roses in July for Christmas Bloom—By Leonard Barron Ex-Secretary American Rose Society

THE ONE CROP EVERYONE WOULD LIKE TO GROW—THE WHOLE STORY FROM PLANTING TO FLOWERING TOLD IN MINUTE DETAIL FOR THE AMATEUR WHO HAS JUST BUILT HIS FIRST SMALL GREENHOUSE

Photographs by H. TROTH and others

ROSES for winter bloom under glass must be planted before the end of July, but the earlier the better. It is during this month that the foundation of success or failure is laid. Roses like a moderately warm, moist condition, which must be provided.

GREAT IMPORTANCE OF CLEANING THE HOUSE

Before filling the benches with soil the house must be disinfected to kill any disease spores or insects. In a general-purpose amateur's house this can't be done, perhaps, but a partial treatment can be given to the bench. If the house is empty burn sulphur on a hot sunny afternoon, shutting up the house tightly as soon as the sulphur is well lighted, and leave all snug until the next morning, when the benches must be washed and cleansed inside and outside, and then given a good coat of hot lime wash. This will destroy any insects or spores remaining in the bench. This wash is prepared as follows: To nine pounds of unslaked stone lime take two pounds of powdered sulphur and water. Pour the water over the lime, and when it commences bubbling pour in the sulphur, stir until dissolved, and apply while still hot. The sulphur in the bench will help to keep the roses

free from mildew and the wash to preserve the wood of the benches.

BEST WAY OF FILLING THE BENCH

The soil as previously composted either in the fall or spring is brought into the house and put into the beds or benches which have been thoroughly cleaned. It is well to line the bottom of the bench with sod to hold in the soil, grassy side of the sod down and the root part up. This is specially necessary when the boards of the bench are placed an inch apart, as is sometimes the case. Fill in three inches of soil with such fertilizer as may be necessary, mixing all in thoroughly with the hands, and at the same time picking out all stones and any other rough material. Leave the surface of the bed rounded rather than level to allow for subsequent settling. Don't pound the soil. Use a fork to break up any lumps if you like, but the best practical men use their hands as the leveling and finishing tool.

JUST HOW TO PLANT

The actual work of planting is easy enough. By means of a line mark off the beds so as to give the plants fifteen inches apart either way, at least. Thoroughly water the young plants in pots two hours

before they are to be planted; they will then leave the pots readily and retain a solid ball, and, of course, they must not be allowed to dry out before being planted. In planting from a pot to a bed or bench the one essential thing is to have the ball of roots and earth from the pot united with the new soil in the bed. To attain this end loosen the ball by gentle pressure, and open out the roots by working with the fingers. Be careful not to break the roots. Set the plants no deeper than they were in the pots, and after filling in with soil firm well by pressure around the sides with the closed fist. Put the larger plants in the back rows. As soon as planting is complete give a good watering and new feeding fibres will be made at once. This watering is given close around each plant rather than over the whole bed, and the work will be eased by leaving a slight shallow around each plant to catch the water. Once planted they must never suffer for want of water, neither should they be saturated at any time.

Syringe overhead two or three times a day on very hot days, and let the plants have all air possible, even leaving a little ventilation at night. This treatment will make a sturdy growth and solid wood, which enables the plants to successfully go through a winter-forcing campaign. The whole of the house, walks, and under benches must be cleaned up and made tidy after the planting.

A GUIDE TO THE ART OF WATERING

From the day the young rose plants are put into the benches they must be watered frequently and systematically. Eight times a day is not too often during the most trying period of the summer. There are great differences of opinion on the subject of watering, and there are hardly two growers who treat their plants alike. In cloudy, rainy weather the most careful manipulation of ventilating and watering, coupled with the best judgment, are necessary to maintain the vigor and the health of the plants. It is not then safe to water or syringe, and the only thing to do is to moisten frequently the walks and under the benches. One successful gardener on a private estate here tells of his method of watering.

"The first good syringing is given at about 7 A. M., under rather than above the foliage, with the idea of dislodging any insect. The other six are given above the foliage, more to moisten the leaves and to stop too rapid evaporation from them, for being planted under glass, without shade, the evaporation through the foliage is more rapid than the absorption by the roots. Under this method I have found that the plants develop foliage rapidly and of good substance, and consequently are less susceptible to attacks of mildew."



389. The best sort of greenhouse for the country gentleman. Larger than you want, perhaps, but built in the right way—for comfort, not for worry. The even-span house is the best for general purposes. The tall-growing American Beauty can be set in the centre benches. The heating pipes are under the benches, out of the way. The raised benches take less soil than solid beds, and are easily managed if carefully watered



390. The kind of American Beauty rose that you want. It has a strong stem, with good foliage close up to the flower, and a solid bud that opens up well

Of course the beds must not be made overwet. The number of syringings may be reduced to two, but they will be heavier and the water given equally to the soil and to the foliage. With frequent syringings the water is kept from the soil as much as possible. The amateur is much more likely to err on the side of giving too little water—maintaining too dry an atmosphere—than he is to make the mistake of giving too much.

After the plants have been in the benches for two or three weeks they will be making a good growth and can be watered more freely. Keep the surface of the soil stirred and clear of weeds. But don't work too deeply—half an inch is enough.

HOW SUCCESSFUL ROSARIANS GET GOOD SOIL

The rose likes a rich soil. Without a proper soil the finest house will fail to produce good roses, and with suitable soil one can get along very well indeed in a makeshift sort of a house. In many small places where it is not practicable to give up one house entirely to roses, it is at the same time possible to attain a tolerable result by paying strict attention to the soil requirements. That all places are not equally well suited for growing roses under glass is most likely due to differences in the soils. The soil should be procured in August or September for use next year so that the winter may act upon it. By preference get soil from an old pasture that has not been cultivated for many years. A heavy loam from grass land that has been regularly grazed is the ideal basis of the compost heap for roses. A good tough sod full of roots is to be sought not for the grass tops, but for the root fibre.

Having the soil, stack it just before winter in proportions of three parts soil to one of cow manure, layer upon layer in a mound of convenient height, but not too high nor too broad for the frost to penetrate. Let it remain without any cover till spring. In composting fresh manure can be used; but if the manure is added at the time the soil is chopped down in the spring it must have been thoroughly rotted previously. As soon as the weather in spring is "open" and the soil sufficiently dried out to be worked the whole heap should be turned and allowed to remain fully a month, when it is turned once more. Use a spade in these operations. One month before it will be carried into the house it should have the final turning, when bone meal (about one part to fifty) or other fertilizer may be added. Everything depends upon the quality of the soil. To that taken from a pasture yielding one ton of hay to the acre one-fourth its bulk of manure may be added, whereas a pasture cutting two tons to the acre will not need more than one-eighth its bulk of manure. At the last turning of the compost an addition of lime and bone meal may be made—but neither in large quantities; lime is to be used only when the soil is specially heavy. Mica is added if the soil is unusually light. It will be better perhaps for the amateur to omit the lime and apply the bone meal (or wood ashes) directly to the soil in the beds or benches as a top dressing before planting at the rate of one bushel to a hundred-foot house. Or, ten pounds of each, bone meal and wood ashes, or bone meal and sheep manure, to 200 square feet

of glass, mixed with the soil in the bench or while turning outdoors, will be sufficient.

THE PRINCIPLES OF GREENHOUSE CONSTRUCTION

The amateur can grow good roses in any reasonably well-built and sufficiently lighted house where a proper degree of heat can be had. All houses of whatever pattern will of course be run east and west. The three-quarter-span roof makes the house very high at the ridge, as a regular pitch of seven and one-half inches to the foot is maintained. The even-span house, in which both sides of the roof are of the same size and the ridge in the centre, is cheaper to build and costs less for repairs. For the amateur the even span is more useful, as it can be turned to any other purpose if roses are tired of.

Although different varieties of rose may show preferences for different soils, still for the amateur a good general one is preferred, and a soil prepared as above will answer perfectly well. A soil that is good for almost all varieties will, if taken and rubbed between thumb and finger, have a mellow, smooth feeling. *Perle des Jardins*, *La France*, *Duchess of Albany*, and *Niphetos* succeed best on a lighter type of soil, while *The Bride*, *Bridesmaid*, *Catherine Mermet*, *Madame Hoste*, *Papa Gontier*, *Souvenir de Wootton* and *American Beauty* require heavy soils for their best development. Roses grown on a clay soil produce blooms of better color and substance than those grown on a lighter one.

The house should be of iron construction—



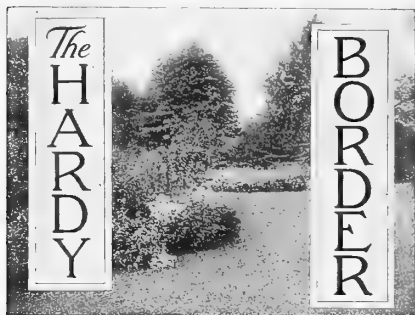
391. The three-quarter-span house is practical where a building wall can be made to do service. Solid beds are preferred to raised benches if the plants are to be carried over more than one season. A good example of modern construction—all iron and glass—permanent, free from drip, shadow and draughts, efficient, attractive and cheaper in the long run because a saver of coal and repair bills

that is, iron with a wood veneer. It costs a little more than a wood house, but it lasts longer, costs less for repairs, and admits more light, because its frame is more slender. An even-span house, twenty-five by fifty feet with six-foot sides, all iron frame, can be erected for about \$2,200 without masonry work, but covering cost of erection, with cement walks, iron-frame benches with tile bottom and glass with sixteen by twenty-four double-thick glass. Also boiler and an adequate system of four-inch cast-iron pipes to maintain a temperature of 55 to 60° F. in zero weather. There would be to add to this figure certain fluctuating charges on account of freight, cartage, expenses of workmen, excavating and grading, the cost of which would vary according to local conditions, and might even total as much as \$700 more. Masonry work, to include a cellar for the boiler, would cost perhaps \$1,000. A wood house would cost perhaps one-third less. The height of the sides modifies the cost of the house very materially, and the higher they are the greater the consumption of coal to maintain the required degree of heat.

SOLID BEDS OR RAISED BENCHES?

The present tendency is favoring solid beds, especially for American Beauty. The hybrid teas, which give the greatest satisfaction under glass, seem to flower more freely when planted in beds; on benches they exhibit a tendency to go dormant, and cease growth.

The benches should hold four and one-half inches of soil and have drainage provided by having the bottom boards or tiles one-half inch apart. In solid beds drainage material—broken stone—is placed in for a space of fifteen inches and a soil depth of six or seven inches allowed.



Raising Hollyhocks From Seed Sown in July

ANYONE can easily raise a stock of hollyhocks by sowing the seeds as soon as possible after they are ripe. It is important to gather them as early as possible, because if left on the plants there is danger of loss from rotting as a result of the late summer rains. The old-fashioned way of raising hollyhocks was by cuttings, and if one wishes to be sure of increasing a given variety that is the only way. I have grown a full set of Chater's hollyhocks, which are the finest to be had, and found that they would

reproduce themselves so nearly true from seed as to render the tedious cutting method quite unnecessary for the ordinary amateur. Sow seeds in July in a drill one inch deep in a sunny, rich soil, leaving plenty of space between the seeds to allow the young plants to grow without crowding until the next spring—not less than four inches. The drills should be eighteen inches apart, to permit cultivation either with the wheel cultivator or hand hoe. At the approach of winter protect the plants by a light covering of straw and leaves with boards placed over all, both to hold the covering and to shed water. This is of course best done by having two boards joined together to form an inverted V. If it is desired to keep the colors separate, of course they must be labeled in the rows where sown; but if a mixed bed of hollyhocks is wanted it is far better to mix the seeds before sowing, for somehow or other it is hard to plant a mixed bed from separate colors—at least it is hard to get it done satisfactorily.

When the covering is removed the following spring the plants will be in perfect condition to transplant to the positions they are to fill in the garden. When lifting them take great care to dig deep and secure intact the long, fleshy roots, as they are the standby of the plants during the stress of hot weather and drought. The reason why there are so many hollyhocks of only average quality seen, and so few really good ones, is that insufficient care is given to preparing the soil. The hollyhock is a plant that can hardly be overfed and revels in a deep, rich soil. Double dig the place where they are to be planted and put a generous quantity of rich manure in the trench when refilling it; or feed freely all through the growing season with nitrate of soda, one-half ounce, and superphosphate and kainit, one-fourth ounce each, to two gallons of water. Give this once in three weeks.

The all-outdoor cultivation of hollyhocks is far more simple than the old way of starting them under glass and, moreover, gives us plants with stronger constitution. Treated in this way as a biennial, it will give better results than when grown as a perennial.

A RACE OF ANNUALS

Very recently a distinct new race of hollyhocks has been introduced which promises to be very valuable to the amateur in that if sown early the plants grow to full size in the season and bloom profusely in late summer—branching freely from the ground up. There are both single and semi-double varieties, and the foliage is often distinctly lobed (showing evident traces of *Althaea ficifolia*), the colors are of many shades, and by a little selection we shall no doubt have as wide a range of color with equal perfection in form as exist to-day in the older hollyhock (*A. rosea*). In their essential requirements these are the same as the older favorites and will certainly become popular.

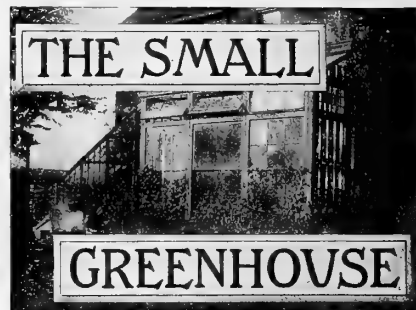
One other advantage of the annuals is that they do not appear to be so liable to the disease which almost ruined hollyhock culture a few years ago. This system of growing

the old type strictly as a biennial, sowing in July as directed, very materially lessens the liability to disease.

Propagation by cutting is accomplished by taking pieces of young shoots, consisting of two joints with lower leaves removed, and inserting them in fine soil frames during August. But I prefer seeds.

Massachusetts.

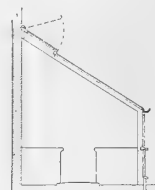
E. O. ORPET.



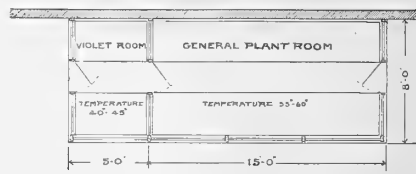
My Practical \$500 Greenhouse

TOO many amateur gardeners are accustomed to pass into a state of hibernation—a sort of enforced passivity in cold months, because they believe nothing can be doing. But winter need no longer be a season of suspended animation. A greenhouse that is warm in winter and free from the evils of drip can be built and heated for \$500.

And such a little house will work the miracle of early started vegetables and plants that flower at Christmas and Easter. It is not



CROSS SECTION



GROUND PLAN

392. An 8 x 20-foot greenhouse like this was erected complete with heating apparatus for \$500. It is just the thing where a south wall is available for one side

an elaborate, highly ornamented structure with all sorts of iron trellis frills and trims about it, but just a plain practical greenhouse made to grow plants.

Of course, it is a "lean-to" house, because, in utilizing a wall of some other building for the side, a comparatively larger house at lesser cost can be erected, and it is placed on the south side of the building or wall, that being the better location—warmer and sunnier—if it is not too far removed from an existing cellar which may be used for the

boiler. When placed against a building it is often found necessary to use a narrow strip of wire netting to prevent icicles falling from the eaves of the building and breaking the glass; there are no icicles to drop from the wall.

For heating I use hot water connected from the cellar of the residence. Each division of the house is supplied with individual coils made up of 2-inch wrought-iron pipes laid horizontally under the benches, and each coil is valved to give me perfect control of the supply of hot water which is fed from the boiler through main pipes of the proper size. The coils, which are raised a few inches from the ground to give free passage of air around them, are supported at intervals by piers, each consisting of two small pipes driven into the ground and capped by a casting to carry the coil pipes.

Of course, there must be a cellar for your little greenhouse in which to set the boiler if you can't use the house cellar, as depth is required to produce a gravity circulation.

COST OF MY 8 X 20-FOOT GREENHOUSE

The cost of making and equipping the house, with heating system complete, under favorable conditions is brought to \$500, as follows:

Wood and iron frame, ready to set up	\$164.21
Glass.....	28.50
Hardware (hinges, bolts, screws, etc.).....	10.70
Material for benches, complete..	37.13
Ventilating machinery	17.60
Boiler, pipe, etc.....	114.39
Labor for all.....	85.00
Freight, grading, etc.....	35.00

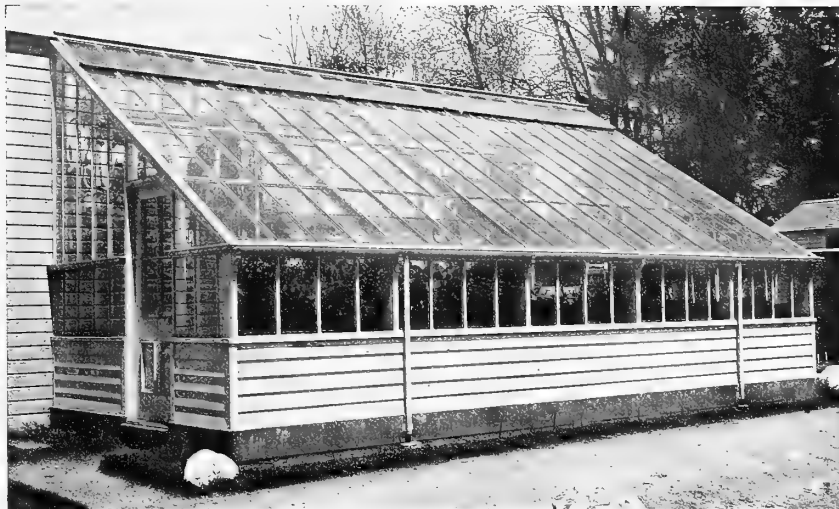
\$492.53

The materials for finishing with two coats of paint and glazing incidentals would cost perhaps another \$5, not more. My situation was such that the boiler could be set quite close to the greenhouse, and so the expense of that item was a minimum. Grading and digging post holes and concrete cost very little on reasonably level ground. A greenhouse 10 feet wide by 25 feet long would cost about \$625.

Just a few words about the construction. The roof and sides are framed with cypress rafters about 2 x 3 inches, placed five feet apart and supported by cypress posts of the same size. In order to prevent these posts from rotting out by contact with the ground each one is fastened, just above the ground, to a heavy cast-iron footpiece, which is set 2 feet 6 inches in the ground and with concrete. Cast-iron brackets are used to strengthen the cypress frame. The glass is carried on light cypress sash bars between each pair of rafters and these are supported on angle iron purlins. The side and ends are closed in up to the top of the benches with novelty siding and sheathing, with building paper between.

HOW THE SEASONS ARE DEFIED

What can I grow in it? Look at the picture and see—rubber plants, oranges, car-



393. An amateur's substantial greenhouse—wood and iron frame—built for service. It can be extended to any length, according to the wall space available. A house like this, 10 x 25 feet, costs \$625

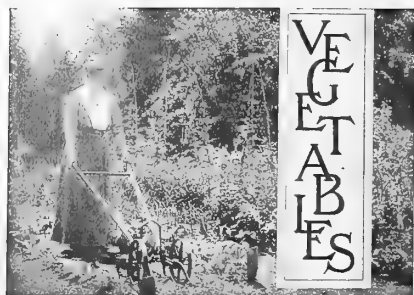
nation cuttings, ferns, azaleas, cacti, cauliflower, tomatoes, endive, celery, egg plants, peppers and the like. I can get all I want for starting the vegetable garden early; a goodly supply of salads and other vegetables when they are not ordinarily to be had; and the house plants, after having served a turn in the living-rooms, are brought here to recuperate, or perhaps to serve as stock for propagating in their season. A partition makes it possible, with a proper arrangement of the heating apparatus, to maintain two distinct temperatures. For instance, as provided in the plan, the larger room can be

kept at 55° to 60° when the temperature outside is at zero, suitable for roses as well as a great number of other plants; the smaller room is heated 40° to 45° for growing violets or lettuce. I wonder why more people don't have little greenhouses. The cost of maintenance? From two to three tons of coal supplies the boiler for a year; glass and paint are cheap. I wager I get more pleasure from one square inch of my little greenhouse than some people get from whole houses filled with plants that they don't even know by name.

IRWIN MANN.



394. How much you can do in a small greenhouse! Defy the winter and have roses at Christmas, start early vegetables for planting out in the garden, nurse the house plants back to health, grow salads all the year round, propagate plants for bedding out, and enjoy gardening when your neighbors cannot



Three Crops of Vegetables from the Same Ground

THE garden will work overtime if you keep up a quick succession of crops. The early maturing kinds must be kept apart from those requiring the whole season in which to mature, and the ground replanted as the crops come off. If parsnips or salsify are planted with lettuce or beets the plot is badly broken up when the latter are harvested, so that it never has a neat appearance through the year.

Lettuce can be planted successionaly in the same ground, and the last crop will be just as good as the first so long as the ground is kept fertile. It would be foolish to plant turnips where radishes had been harvested. The same maggot affects both, and, although the first crop was but slightly touched, the second one might be rendered practically useless, as the insects increase very rapidly. Potatoes and beets are attacked by the same scab, so the one should not follow the other. None of the brassica family should be used to succeed one another, as the same insect affects them all. The succession arrangements for my garden are told in the following planting scheme by plots in the actual record of last season.

Plot No. 1.—Planted with parsnips and salsify April 15th. No succession crop, as these take the whole season to mature.

Plot No. 2.—Lettuce and radish. The former set out from greenhouse on April 15th, radish sown on April 6th. Both harvested May 28th. Egg plant and peppers planted June 1st occupy the ground the rest of the season.

Plot No. 3.—Spinach harvested June 10th. String beans planted June 12th will be harvested August 14th. Sow Yellow Stone turnips August 16th for winter use.

Plot No. 4.—String beans planted April 18th are harvested June 28th. Sow to winter carrots July 1st.

Plot No. 5.—Early corn planted April 17th; harvested July 23d. Planted to winter celery July 25th.

Plot No. 6.—Early peas sown April 6th, harvested June 18th. Sow late corn June 20th.

Plot No. 7.—Early beets sown April 8th; harvested June 16th. Lettuce transplanted June 18th; harvested August 1st. Sow string beans August 3d.

Plot No. 8.—Lettuce sown April 8th; harvested June 10th. Beets sown June 13th; harvested August 10th. Last sowing of corn July 13th.

Plot No. 9.—Early carrots sown April 8th; harvested June 25th. Planted in cabbage June 27th.

Plot No. 10.—Early cabbage planted April 14th; harvested June 15th. Purple-top turnips planted June 17th; harvested August 18th. Sown in winter beets August 20th.

Plot No. 11.—Early turnips sown April 6th; harvested June 15th. Lettuce sown June 18th; harvested August 20th. Sow spinach August 22d.

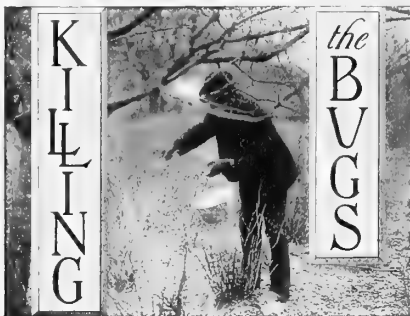
Plot No. 12.—Peas sown April 20th; harvested June 30th. Endive sown July 2d.

Plot No. 13.—Corn sown May 10th; harvested August 15th. Sow lettuce August 17th.

The succession kept the ground busy, there being allowed only enough time between plantings to properly till the ground. It is dug over, trenched and fertilized for each new crop. We did not secure a really continuous supply of all the different vegetables enumerated, but the interims were very short, and we had about three crops of each throughout the season. The usual thing for the amateur is to have only one crop, and if he succeeds in getting a second he feels quite proud.

New York.

WILLIAM SCOTT.



San José Scale on the Move

YOUNG San José scales begin to appear during the latter part of June, and in early July are abundant upon badly infested trees. The purplish discoloration they make upon green twigs, leaves and young fruit is very characteristic. This pest can be checked by repeated spraying at intervals of a week or ten days, with either whale-oil soap solution or kerosene emulsion, prepared as follows:

Kerosene Emulsion.—Hard soap, one-half pound; boiling water, one gallon; kerosene, two gallons. Dissolve the soap in the water, add the kerosene, and churn with a pump for five to ten minutes. Dilute four to twenty-five times before applying. Use strong emulsion for all scale insects; for such as plant lice, mealy bugs, red spider and thrips weaker preparations are effective. Make the emulsion shortly before using. In sections where lime or hard water is the rule, better results will probably be obtained by using the sour-milk emulsion, which is simply two gallons of kerosene and one gallon of milk emulsified by passing through a pump and diluted as above.

Whale-oil Soap Solution.—This compound may be used in the same manner as kerosene

emulsion. For scale insects, as a summer application, the extreme strength is given by Dr. Smith as one pound to four gallons of water.

Although these means are possible, and for the amateur who has only a few trees or shrubs to care for quite reasonable, still they are too costly where a large area is to be sprayed. A thorough application of a winter wash in the early spring is then the proper thing.

ALL KINDS OF BEETLES AROUND

Asparagus beetles continue their depredations throughout the season, and it will pay to spray the old beds thoroughly with poison wherever the insects are abundant. Blister beetles of various species are likely to appear in numbers, and, as a rule, should not be destroyed, since the young of several species feed upon grasshopper eggs and are therefore beneficial. There is no better way of checking squash borers than by slitting the infested portion of the stem lengthwise, destroying the borer and then lightly covering the wounded portion of the vine. If this be done as soon as a runner begins to wilt very little injury will result.

Another insidious insect enemy is the stalk borer, a brown, white-marked caterpillar which delights to tunnel in thick stalks of various plants. It is sometimes abundant enough to cause considerable injury to potatoes, corn and various thick-stalked flowering plants. There is nothing better than cutting the infested stems and destroying the borers.

E. P. FELT.

New York State Entomologist.

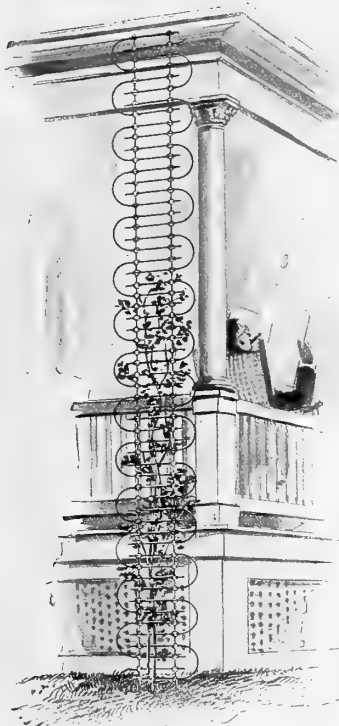
Good Ways to Eat Strawberries

HOW to eat strawberries? Every one knows that! Yes, we in America know how to eat them with a spoon, and some of us know how to chop or mash them into a mess, and then make it messier with cream and sugar. Other countries have their methods. The English method of assorting the berries to a uniform size and placing them upon the table with the hulls on is very attractive, particularly for breakfast or as a fruit course at dinner. Each berry is taken by the hull between thumb and finger, dipped in sugar, and perhaps in cream also, and then eaten singly, the teeth cutting between the hull and fruit. When properly tried this method is sure to be continued. In France claret wine is used as a dressing for strawberries. To those fond of claret this gives a pleasing combination that brings out the flavor very richly.

The Spaniards have a custom that is delightful: after the berries are sugared the juice of an orange is squeezed over them; the harmony of the fruit acids is most agreeable. It is strongly recommended for the breakfast service. However eaten, let every berry be thoroughly ripe; no imperfectly ripened berry should ever be placed upon the table unless cooked. Too much care in sorting berries cannot readily be expended.

New York.

JAMES WOOD.

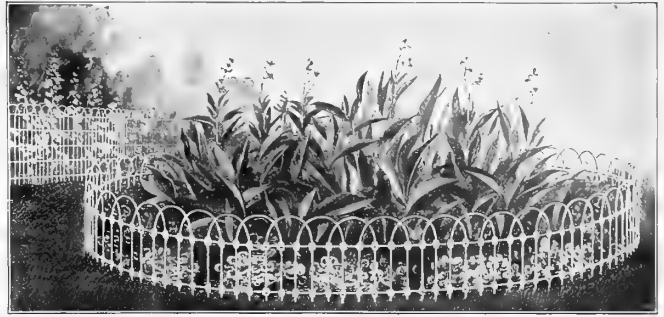


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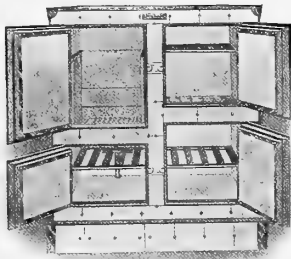
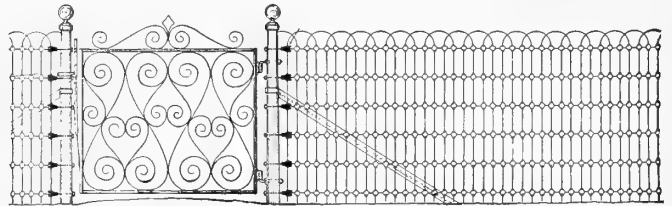
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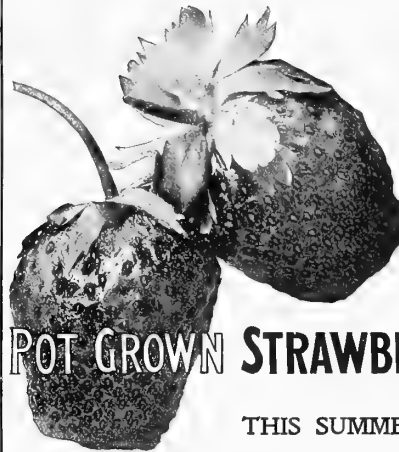
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FAIRMOUNT WEED KILLER will kill the weeds and grass that deface your walks and drives, and will do the work at small cost and do it effectually and thoroughly.

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FERTILIZERS

How to Buy Phosphoric Acid
PHOSPHORUS, which is taken up as phosphoric acid, is essential in building up the frame or skeleton of the plant. There is no short road to getting phosphoric acid; there are no bacteria to aid us in this case as with nitrogen, and for garden crops it must be present in the soil in abundance. What form of phosphate-bearing fertilizer shall we use? The question is an important one.

Here are the principal forms in which phosphoric acid is offered:

- THE FIVE COMMERCIAL FORMS
- (1) Bones, and materials derived from them—bone meal, bone black, and bone ash.
 - (2) Rock phosphates. Phosphate rock is found in large quantities in South Carolina, Florida and Tennessee. It is sometimes sold in powdered form called "floats." Usually, however, the ground rock is treated with strong sulphuric acid, when it is called "dissolved rock" or "acid phosphate," which is more soluble and so is more quickly distributed throughout the soil.
 - (3) Thomas slag—a product of steel manufacture, also called basic slag.
 - (4) Several of the guanos, as the Peruvian and Mona guanos, which are very rich in phosphates.
- Not considering either cost or convenience, the acid phosphate is best for general garden work, because it is most quickly soluble.

WHY THE MOST COSTLY IS THE CHEAPEST

Making a comparison as to which is the cheaper form is a simple little problem in arithmetic. First calculate the number of pounds per hundredweight or ton of each, and determine which is the cheaper, pound for pound, of the material wanted. Let us take an example: Acid phosphate bearing 16 per cent. available phosphoric acid can be bought for sixteen dollars a ton. This is equal to eighty cents a hundredweight. Therefore each hundredweight has just sixteen pounds of material, costing just five cents per pound. The acid phosphate sold at twelve dollars per ton, or eighty cents per hundredweight, contains 10 per cent. of acid. Each hundred pounds contains ten pounds of the material the plant needs, which will cost six cents per pound or 20 per cent. more than it did in the higher-grade material.

Outside of the cost for a pound of the available plant food it is usually better to use the higher-grade material for garden work, because there is not so much hauling of a lot of "filler," and which in all probability is

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DRY SPRAYERS

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Dear Sir.—Have been delayed in reporting on goods you sent me for trial by severe illness. SLUG SHOT was as good, and did the work it was advertised to do as well and effectively as compounds and mixtures costing double and triple the price asked for it. For potatoes it proved especially efficient. Your BORDEAUX PULP is all right, dissolves readily and minutely so it does not clog nozzles of finest sprayers. Your AMMONIATED COPPER SOLUTION saved my melon vines (musk). It was not a case of preventing blight, but of checking it after it had developed and to quite an extent. I shall be glad to use and commend your goods another season.

Yours truly, (Rev.) J. REYNARD LAWRENCE,

North Middleboro, Mass.

Nov. 21, 1904.

not as fertile as the soil upon which it is to be used.

THE CRUCIAL TEST

Do not make the mistake of buying primarily by the ton, but according to the guaranteed analysis. The guarantee that you want to look for is that of the per cent. of available phosphoric acid. Do not be misled by the long strings of other figures which are sometimes placed on the bags; they contain information about things that are of no importance to the gardener.

WHAT THE COMMON CROPS NEED

Although a well-balanced fertilizer, like one of those described in the JUNE GARDEN MAGAZINE, will serve the amateur very well, there are certain preferences shown by certain crops, which are set forth here, together with an estimate of the quantity to be used on 100 square yards. The quantities are given in percentages of actual plant food.

PERCENTAGE ANALYSIS

Crop	Ammonia	Phosphoric Acid	Potash	Pounds for space, 10 x 10 yards
Beans and peas.....	3	7	7	10
Cabbage and cauliflower.....	6	5	8	31
Cucumbers, melons and egg plants.....	(Best use a good compost with a handful of high-grade fertilizer to each hill.)			
Onions.....	5	5	8	25
Potatoes.....	6	7	8	30
Spinach.....	5	8	6	30
Tomatoes.....	5	6	7	25
Turnips.....	5	7	8	20

It should be remembered that these figures do not represent exact rules. Soils differ in their chemical composition; they vary, too, in their organic matter and in the amount of water which is available to the plant. So it is impossible to state absolutely the amount of fertilizer for the same crop on different soils, but the differences are not of great practical importance; the chief thing is to see that there is plenty of plant food present in an available condition, and in about the ratio stated above.

HOW TO CALCULATE QUANTITIES

Suppose now we want to make a mixture for turnips on the basis of the above table. We need an equivalent of 7 per cent. phosphoric acid in twenty pounds of mixture. Assuming 16 per cent. acid phosphate as the source of the phosphoric acid, we determine first the actual number of pounds of phosphoric acid. Twenty pounds should yield 1.4 pounds—i. e., 7 per cent. Dividing 100 by 16 we find that it takes 6.25 of the acid phosphate to yield one pound of the phosphoric acid. Multiplying 6.25 by 1.4, the number of pounds of phosphoric acid wanted, we get 8.75, the number of pounds of acid phosphate to be used in making the mixture. Similarly, the amounts of the other materials to be used can be determined on when the source and the composition of the source are known.

New York.

J. S. CATES.

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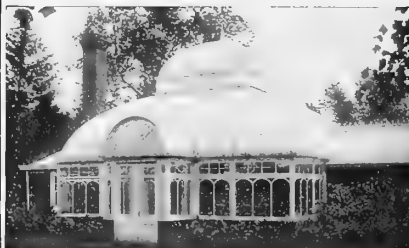
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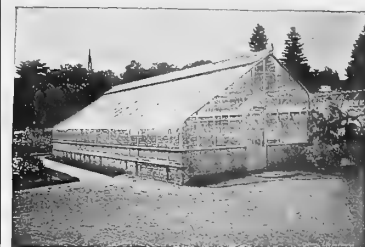
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Cinerarias, one of the most showy winter flowering plants, easily grown in a cool greenhouse. Boddington's "Matchless" mixture is unequalled for size of flowers and brilliancy of colors. Per pkt., 25c.

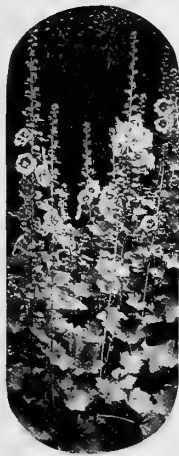
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Our strains are the best procurable, being grown by English specialist. New Crop Seed now arriving.

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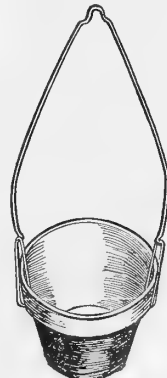
Prices: Sizes up to five inches, per dozen, 50 cents; gross, \$4. Sizes for pots, from five to ten inches, per dozen, 75 cents; gross, \$7.

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Light, strong, easily applied. Every grower of Carnations should use these. Prices: 50 Complete Supports, \$2.25. 100 Complete Supports, \$3.50.

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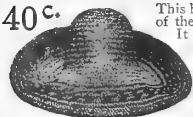
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Cheap English Books on Amateur Gardening

ONE of the wonders of the world is that the English publishers can get out books on gardening bound in an attractive and durable manner, containing 150 pages and 100 pictures, which sell for a shilling in England and thirty-seven cents in America. For example, "Pictorial Practical Vegetable Growing," and other books with similar titles on Fruit Growing, Greenhouse Management, Bulb Culture, Rose Growing, and Chrysanthemum Culture, by Walter P. Wright (Cassell & Co., London and New York. 4½ x 7½ inches). We have nothing like them in America, nor like the penny weeklies devoted to gardening. Such things are possible only among a race of gardeners. Judged by these two standards, American horticulture is still in the dark ages.

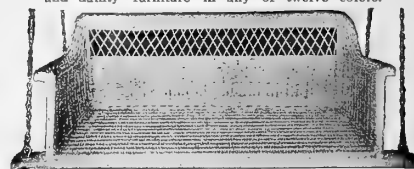
Yet it is commonly said that there is no inducement for an American to buy an English book on gardening. There isn't for the beginner; but there is for the expert. The beginner doesn't know how to allow for the differences due to climate; the expert does, and there is probably no American horticulturist who cannot get points from a cheap English book written for beginners. For example, what American country gentleman is there so fond of good vegetables that he cannot learn, from such books, of new vegetables worth growing and better ways of cooking some of the kinds he grows now? Anyone who wants to train fruits against a wall after the European fashion must either have a European gardener or get some little book like Wright's and do the work himself. In greenhouse management climatic differences count for less, and THE GARDEN MAGAZINE will never be happy until this country is filled with little private greenhouses as England is.

It is easy enough to say that our climate is radically different from that of Europe; that we have a different set of varieties, tools and insects; that we are beginning to make our own garden literature; that we are destined to grow farther and farther apart, and that the only gardening books of either country that can circulate to any great extent in the other are: (1) Great scientific works like Nicholson's Dictionary and Bailey's Cyclopaedia; (2) art works like the "Gardens Old and New," and (3) works of fiction in which the gardening element is insignificant, like "Elizabeth and Her German Garden." This may be all true, but so far is English gardening ahead of ours that any of us who are specially interested in any particular



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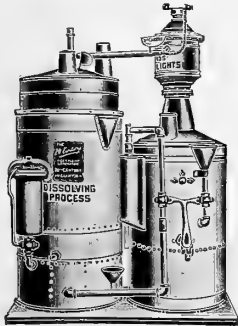
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These books of Wright's rub in the "Pictorial Practical" idea a great deal harder than is necessary for the average American intelligence, and the pictures are mostly crude line engravings—too crude for an American success—but they hit the bull's eye every time. In spirit they are full of originality.

The man who says English books on gardening are "no good" is a Philistine!

ANIMAL FORMS IN LIVING TREES

Another series of low-priced English gardening books is published by John Lane in London and New York. These "Handbooks of Practical Gardening" contain about eighty pages (4½ x 7½ inches), plus about thirty full-page photographic illustrations, and sell in America for a dollar. No. 18 is "The Book of Topiary," and shows evergreens curiously clipped into the form of birds, animals, chessmen, etc. It is the fashion for us to sneer at this sort of thing, and it is safe to predict that it will never become popular in America because we have neither the entailed estates, the hereditary labor, nor such plastic material as box and yew. But there must be something in it or the English cottagers would not take to it, as some of these pictures show, and it is said that even the most ardent haters of formalism concede that it fits to perfection in such ancestral homes as the famous one of Levens. The best American examples of it that we know of are in the Hunnewell Estate at Wellesley and in the maze at Del Monte, Cal., pictured in May GARDEN MAGAZINE, page 178.

Strawberries After Fruiting

Our strawberry bed is mulched with leaves. They are put on in the winter as a cover. When the bearing season is over the leaves are raked away from the bushes, to afford a footing for the runners, and the bed receives no further attention, save an occasional weeding, until December.

When preparing the bed for the winter put stable manure, to the depth of three inches, between the rows, then cover the entire bed with leaves.

In the spring, as soon as the ground can be worked, rake the leaves into the spaces between the rows, which are then spaded up, turning under the leaves and the manure. The ground between the plants is loosened by pushing a flat-tined fork down to its full length and gently working it back and forth, thus stirring the ground without disturbing the roots. The ground is then raked fine and a quantity of hard wood ashes sown thickly over the bed.

Once a week, until the blossoms set, the bed receives a vigorous raking and wood ashes are applied immediately around each plant, after which the bed is mulched. The leaves for the mulch are gathered during the previous fall.

G. L. W.

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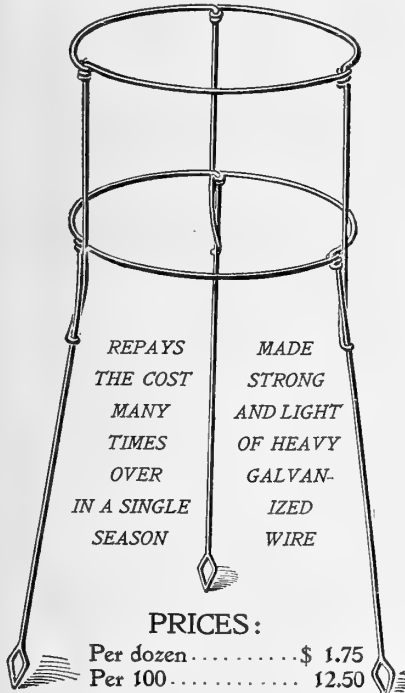
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Poultry Department

While the subject of poultry is not within the editorial scope of this magazine, yet so many of our readers are interested in poultry raising in connection with their country homes, that it is our desire to make the magazine of the greatest practical interest to them and we shall, therefore, extend to the readers of THE GARDEN MAGAZINE the service of our Poultry Information Department. Any information about the selection and care of poultry or other information on the subject will gladly be given. Address, Poultry Information Department, THE GARDEN MAGAZINE, 133 East 16th Street, New York City.

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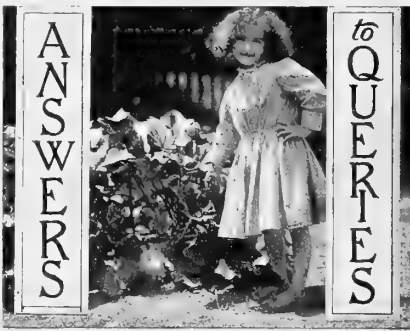
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HOW TO GET RID OF BLACK ANTS

Q. The black ants are a perfect pest in my little garden. Part of the ground is occupied by a ledge of rock, the base of which seems to be the starting point for the ants. I have tried lime, tobacco dust, borax, and finally flour and sugar mixed with Paris green—all to no purpose. I have dug them up thoroughly—no use. Can you help me?
E. E. L.

New York.

A. Boiling hot water poured into the holes will destroy large numbers of the ants. An effective remedy is bisulphide of carbon poured into the holes. This quickly evaporates and the heavy vapor penetrates the lowest depths of the runs. Pour in two tablespoonfuls at one spot. Bisulphide of carbon is inflammable, so that it should be kept from fire or sparks for fear of ignition.

WHY SOME DAFFODILS DON'T FLOWER

Q. My daffodils bloomed freely the first year, though they were planted in uncultivated soil. Last year and this year there have been very few flowers. Should they be separated? If so, in fall or spring? Do they need fertilizer?
A. F. M.

New York.

A. If they were not originally planted in suitable soil, rich without humus, a quick-acting fertilizer should be given. Liquid manures are especially suitable, or a top coating of guano cautiously applied, or preferably sheep manure powdered, will furnish the proper nutriment. Strong manuring of daffodils is apt to injure the coloring. Spring bulbs grown in soil not naturally moist stand in need of water. There is no special rule for separation of narcissi bulbs. There are innumerable varieties with different degrees of increase, and are to be taken up only when they seem crowded, or oftener when increase is desired, the offsets growing more quickly if separated. Narcissi can be moved at any time while dormant.

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[G. M. 270-Y 2]

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Binder and back numbers for
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 { April, No. 3
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Tulip Joost van Vondel

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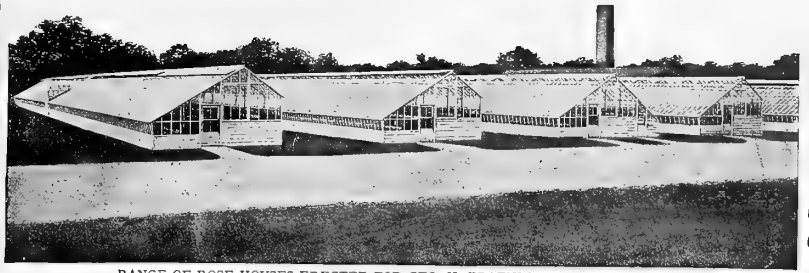
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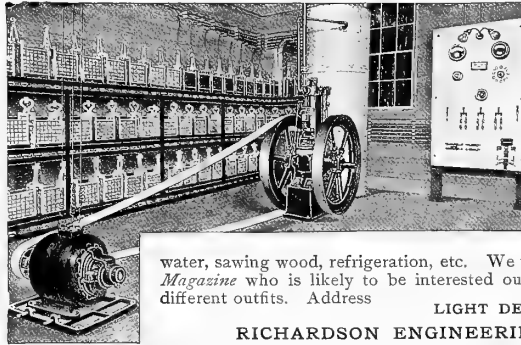
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