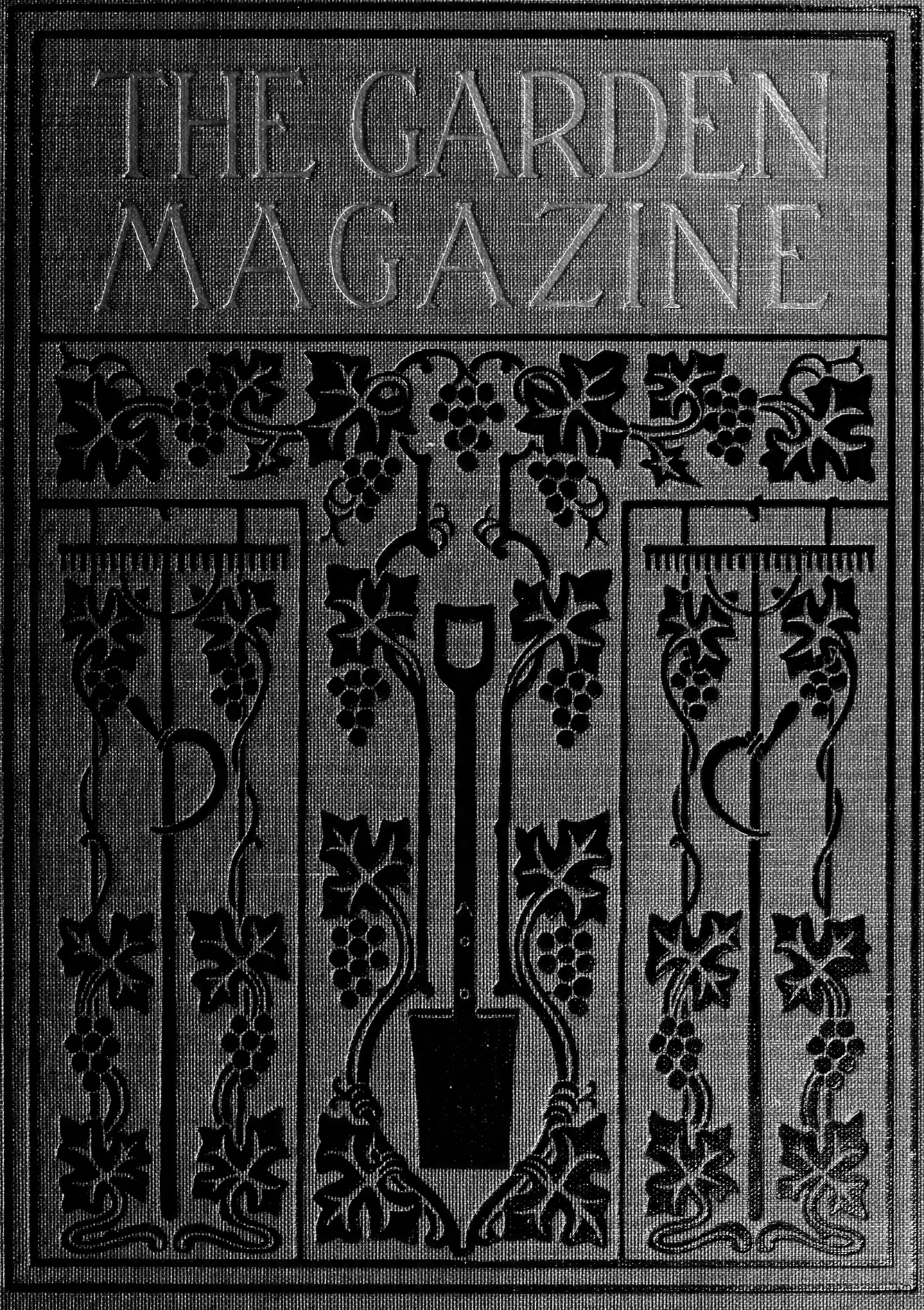
THE GARDEN MAGAZINE



THE GARDEN MAGAZINE

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

Volume XVIII

August, 1913, to January, 1914

GARDEN CITY NEW YORK

DOUBLEDAY, PAGE & COMPANY

1914

INDEX TO THE GARDEN MAGAZINE

Volume XVIII — August, 1913, to January, 1914

The asterisk (*) signifies that the subject is illustrated

INDEX TO CARDEN MAGAZINE

AUGUST
1913
Vol. XVIII. No. 1

"Who loves a garden loves a greenhouse, too"

Making a Strawberry Bed

Flowers for Winter and Easter

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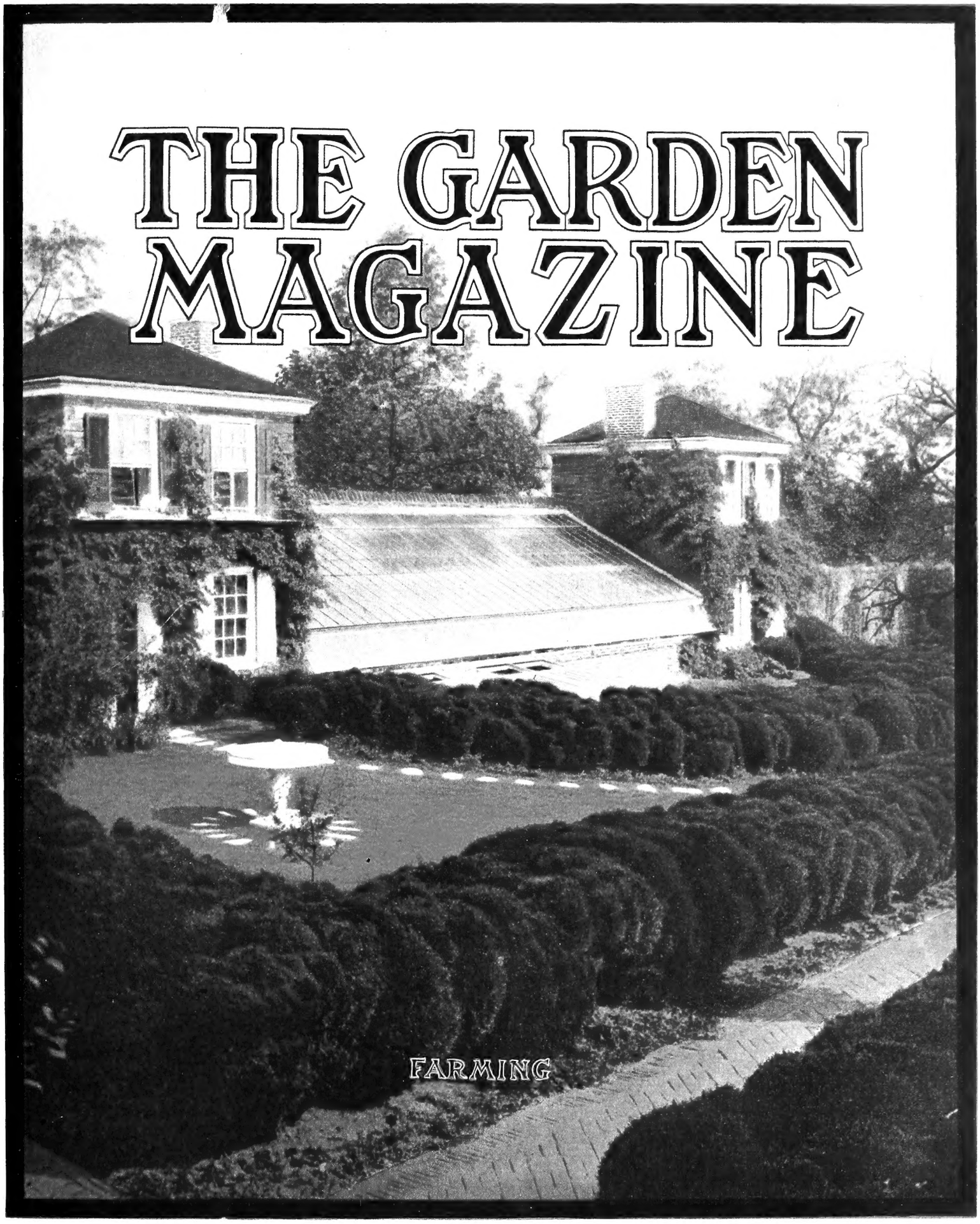
THE GARDEN MAGAZINE



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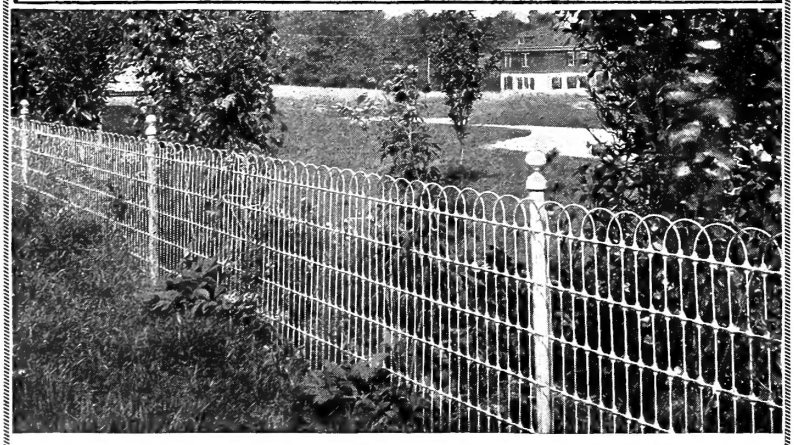

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They are first completely formed, then wholly immersed in melted zinc. Every particle of surface is thus heavily coated and every joint is tightly sealed. Without painting or other attention, Excelsior "Rust-Proof" Fences will stand year after year in perfect condition. You will find it a poor investment to erect any other kind.

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THE TALK OF THE OFFICE

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

HOW KIPLING'S BOOKS SELL

There has been for ten years, in all parts of the world where English is spoken and countries where the books have been translated, a great and increasing sale for the writings of Rudyard Kipling. Readers do not, perhaps, realize that his books sell now many more copies every month throughout the year than those of any other living author, and that their sale is increasing and has increased to an extraordinary degree. Doubleday, Page & Co. have recently made up some figures which tell the story. Since 1903, ten years ago, the sales of his authorized editions, made through the book trade alone and not including mail order or subscription or other mediums of sale, have increased from five to ten times, and in some cases even twenty times, and the last year showed by far the largest sales.

For instance: The sale of "From Sea to Sea," in 1912 was just twenty times as much as in 1903. "Just So Stories" has increased about ten times since 1904, when the book was quite new. "Plain Tales from the Hills," which has been printed in various garbled editions by every kind of pirate, has sold in the revised and authorized edition eighteen times more than in 1903.

"Kim," which has always gone well and has been one of Mr. Kipling's best known books, sold in 1912 about four times as many copies as in 1903. "The Naulahka," a tale of India written with Wolcott Balestier, has grown year by year until in 1912 the sale was eleven times as great as in 1903. "Life's Handicap," "The Brushwood Boy," "The Light that Failed," "Under the Deodars," and "Departmental Ditties" have all sold in 1912 much more than ten times as many as in 1903. Among the most popular of all of Mr. Kipling's books is the volume of "Collected Verse," which sells probably vastly more than any other book of poetry written by a living author. The "Jungle Books," also, keep on increasing, and a single poem like "If—" has sold many tens of thousands.

All this notwithstanding the great rush of 11,000 new books each twelve months, and the ever widening circle of Kipling readers goes on.

These figures do not take into account the vast number of books printed by the pirates and traded in under all manner of conditions and under the false representation that these uncopyrighted books comprise Mr. Kipling's more or less complete works. As the Copyright Law was passed in 1891, it will easily be seen that books not covered by copyright are Mr. Kipling's earliest works, and do not include anything written since that date.

THE KIPLING INDEX

We have published for the benefit of Kipling enthusiasts a book entitled "A Kipling Index" which is a guide to the authorized editions of Mr. Kipling's works, giving alphabetically the titles of all the stories and verses, with cross references throughout. Verses without titles require a separate entry, and are indexed under their first line. Under the entry "American Notes" are summarized the contents of Mr. Kipling's letters upon things American.

This book will be sent free to any Kipling reader who would like to have it, and we feel sure it will turn out to be valuable to those who are always asking in what volume such and such a story, or such and such a poem by Mr. Kipling appeared.

GENE STRATTON-PORTER'S NEW BOOK

First Edition, 150,000 Copies

On August 17th, Mrs. Porter's birthday, we shall publish a new book by the author of "Freckles," "A Girl of the Limberlost," and "The Harvester." It is called "Laddie. A True Blue Story" — another open air novel absolutely true to the life it presents.

There has been much talk concerning the reason why Mrs. Porter's books sell in such great numbers. Our own idea is that the most obvious answer is because they are wholesome and original. There seems to be a notion rampant among critics, and many authors, and people generally, that men and women are not interesting book material unless they break the laws of God and man and engage in all sorts of lawless, complicated social relations. James Lane Allen once said that "man must know the lowest, in order to appreciate the highest." If this is true of man, it is also true of woman. What a fine world we should have if all of us had to roll in filth in order to appreciate a clean soul and body. By the same token, there would be nothing left to appreciate. Always and forever the man who conquers a temptation is a bigger, and more interesting subject than the man who weakly follows his inclination, and they should not be held up to the world as the real thing, or the most interesting people, or the types which represent the American home.

Mrs. Porter's books — and this is true of the new novel, "Laddie" — represent the strong man who conquers. Any book that teaches this thing is a bigger book and more suitable to have in the home and to read for any purpose than one that deals with the breaking of the law. Mrs. Porter's books cannot do any one harm; they may, and do, help thousands.

Year after year they steadily increase in popularity and sale; so far in 1913 the sales are larger than ever before. They go into the homes which appreciate and care for them and these readers tell others in an ever widening circle, not as a sensation, but as a good substantial expression of American life.

J. C. SNAITH'S NEW BOOK

In an editorial article in the New York Times, the writer has this to say of what Doubleday, Page & Company have considered Mr. Snaith's most interesting book:

"It is one well worth bearing in mind if your list for Summer reading has not been completed. . . To enjoy Mr. Snaith's newest satire, which is often grave and deep, though the humor of it is infectious, one need not accept the point of view. . . The conduct of the narrative, the happy characterization, the sprightly dialogue, are the things that count. We find no disturbing prophecy in Mr. Snaith's book, but an admirably told story. The chapter in which the hero has heart-to-heart talks, first with his aristocratic and well-informed butler, then with his King, and then with a railway lineman of uncommon intelligence, we should call the best Mr. Snaith has written if it were not for the memories that crowd upon us of so many other good things he has written."

Poultry, Kennel and Live Stock Directory

Information about the selection or care of dogs, poultry and live stock will be gladly given.

Address INFORMATION DEPARTMENT, THE GARDEN MAGAZINE, 11-13 W. 32d Street, New York.

CONTENTS

AUGUST, 1913

SUBSCRIPTION: $1.50 a year Single copies, 15 cts.

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Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879
F. N. DOUBLEDAY, President HERBERT S. HOUSTON, Vice-President S. A. EVERITT, Treasurer RUSSELL DOUBLEDAY, Secretary

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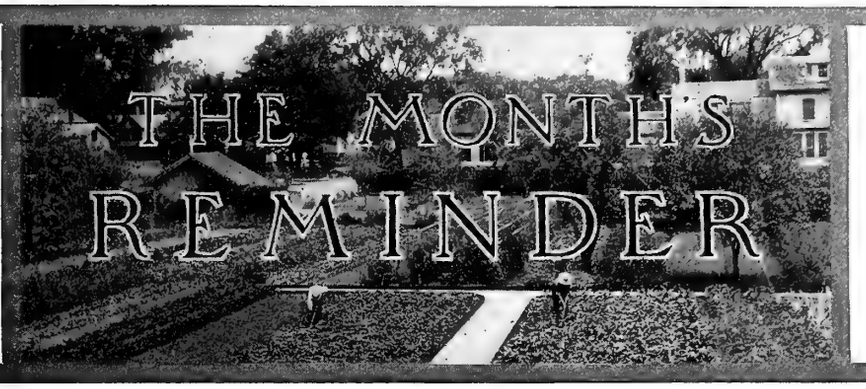
The Garden Magazine

VOLUME XVIII AUGUST, 1913 NUMBER 1

For the purpose of reckoning dates, the latitude of New York City is generally taken as a standard. In applying the directions to other localities allow six days' difference for every hundred miles of latitude.



Chief activities of this month: Transplanting evergreens; setting out potted strawberries; sowing seed of perennials for next year's flowers; getting the greenhouse in order; making up the bulb list. Plant Madonna lilies.

KEEP busy these days — not all day, of course, but in the cool hours before breakfast and after supper. Among other things

Wrap the trunks of the peach trees for eighteen inches or two feet from the ground with common brown paper to keep out the borers.

Watch for the aster beetles — dull black, lanky fellows an inch or so long, that chew away the buds and foliage of the aster and other cultivated plants. There is nothing to do but pick them off, unless you can get the chickens to do it.

Spray around the base of the elm trees with kerosene emulsion, or hot water to kill the pupæ of the elm leaf beetle which matures either on the ground or in crevices on the lower parts of the trees.

Use the emulsion on chrysanthemum, viburnum, nasturtium, and all other plants on which aphides or green or black flies appear.

Pick off and destroy all the caterpillars and grubs in sight. Where a poison can safely be used, spray with arsenate of lead.

Buy potted strawberry plants, unless you have raised your own from runners as suggested last month.

Bud any of the stone fruits to improve or especially liked varieties. Of course you should have cut the bud sticks in winter and kept them in cold storage, but you may be able to buy what you want.

Propagate tall, leggy rubber plants and dracenas by pot layering, which consists of (a) making a slit in the bark half way up the plant, (b) binding about the wound sphagnum moss or two halves of a flower pot filled with some absorbent material, (c) keeping the moss moist until roots form when (d) the stem may be severed below the roots and each half treated as a separate plant.

Look on page 34 of the August, 1907, GARDEN MAGAZINE for a list of worth while greenhouse duties.

Keep flowers picked clean, especially where a continuous supply is wanted.

Start from seed, preferably in a coldframe, all perennials and biennials for next year's garden, and house plants for winter bloom. (Pansies are often sown outdoors in the place they are to occupy permanently.)

Order, buy and plant, with the least possible delay,the following types of bulbs: (a) Those that should make good growth this fall in order to bloom next summer, as the Madonna lily, Spanish and English irises, the great lily (*Eremurus robustus*), and crinum. (b) The two species that planted now will bloom this fall, viz., colchicum and sternbergia. (c) The tender lilies to be forced for Christmas effects — for example, the Bermuda lily, freesia, daffodils, Paper White narcissus, Roman hyacinths, etc.

Get the late celery crop transplanted, setting the plants between every two rows of corn if you like, provided the latter will come out within two weeks. Another good place for celery is between every third and fourth row of onions; the latter cast no shade and will be harvested in time to provide loose soil for banking.

Plant for crops before frost, peas, corn, radishes, mustard, New Zealand spinach, beans and lettuce — using always early, quick growing varieties and, so far as can be determined, drought resisters. Plant for winter and next spring's dinners: corn salad, endive, chervil and salsify.

Plant evergreens, observing the essential but often forgotten practice of keeping the roots moist and protected *all the time*. If transplanting, wrap wet burlap around them the minute the tree is dug; if buying, keep the stock in a shady spot, waiting to unpack until it can be placed directly in the ground and watered copiously. However, if there *must* be a delay of a day or more see that the packing is kept moist.

Install, even now, an overhead sprinkling system to relieve you of the waste of time and energy involved in supporting and hauling around a hose. If the large, herbaceous ornamentals suffer from drought, sink a tin can with holes punched in the bottom close to the plant or in the midst of small groups. Fill this with water (occasionally liquid manure) once or twice a day and the root systems will really get enough. Meantime mulch the ground around the plants.

Visit all the gardens you can find and compare them with your own. It is usually easy to criticize the neighbor's plot. How about your own if subjected to the same dispassionate inspection?

Questions to Answer

IS THE lawn a smooth, unbroken expanse of good turf? Or is it spotted with "carpet beds," specimen shrubs and isolated, aimless trees?

Is it bounded by soft, curving lines of shrubbery and herbaceous border?

Are the raw edges and corners of fences and buildings masked by well grouped ornamentals and perennials?

Are there plenty of vines to furnish shade and a graceful drapery about the dwelling?

Do the lines of the trees frame distant vistas, and hide nearby unsightly objects?

Are there any formal, geometrical, ungraceful beds?

Are there any clashes of inharmonious color in the border?

Are there any mistakes in height where the tall growers are in front and the shorter ones behind?

Are there plenty of perennials? They are the mainstay of successful gardens.

Isn't there room for a little lily-pond or some sort of a unique garden in some odd corner?

Are you succeeding in getting plenty of color and cut flowers every week throughout the summer?

Are you getting enough in proportion to the ground occupied and the time and money expended? If not, some more planting is needed.

AN EASTER POSSIBILITY IF YOU BEGIN TO PLAN IN AUGUST

When winter comes the joys of the summer garden can be made to live all over again under glass

Plants and Flowers For Next Easter—By W. C. McCollom, New York

THIS SEASON'S GREATEST OPPORTUNITIES WITH THE GREENHOUSE—MAKING PLANS TO CONTINUE THE GARDENER'S INTEREST INTO THE DULL MONTHS—PROFITABLE COMPANION PLANTS FOR THE SINGLE GREENHOUSE

Cineraria

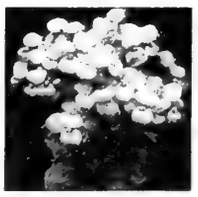
AUGUST and greenhouses? Seems incongruous, perhaps; but now is the time to prepare for flowers next Easter. The greenhouse activity begins as the active outdoor work wanes. Thus it is that the true gardener needs must have his little house to fuss over during the winter and provide flowers at the holiday time. Moreover, with a greenhouse hosts of plants can be raised for setting outdoors later, and tender plants can be carried over. What more enjoyable than a little house full of brightly colored and sweetly scented flowers, to say nothing of a few forced vegetables? You readers who have already known the joys of the outdoor hardy garden should now turn your attention to the possibilities of the greenhouse.

THE KIND OF HOUSE

With proper management and an intelligent selection of companion crops, a small greenhouse — perhaps one 18 x 25 ft. — is capable of wonders. For Easter you can have heather, acacias and azaleas; or at another time, such pot plants as cyclamen, cineraria or calceolaria. And always pans of tulips, hyacinths and narcissus, as well as cut flowers for all purposes. Not everything at once — Oh, no! Of course you put together crops that require similar conditions. You cannot for instance, grow roses and cinerarias successfully in the same house. If you must have both a two-compartment house is essential. And take care that the compartments are not so small as to be impractical. There is too much fluctuation in temperature in a small compartment. If the sun is shining with the ventilators closed the smaller house quickly heats to a dangerous degree, or if the ventilator is opened a trifle too much, it cools off just as quickly. My advice is against anything much smaller than 18 x 25 ft., each compartment, or one house for general purposes; but close attention and proper management of ventilation will produce the finest results in even a much smaller house. It sounds curious but it is true, that the smaller the house the greater and the more constant the attention demanded, in proportion.

But, after all, results from any greenhouse depend largely on the ingenuity of the handler. The skilful operator will have a rotation of flowers, each one occupying bench space for the minimum time; he will also transgress on the laws of nature by growing plants in a temperature or under conditions not wholly to their liking. The beginner, however, should select plants that require the same general conditions, as given in the tables that supplement this article. Observe the temperature figures — soil and moisture can be controlled for each plant.

Practically every single plant demands individual treatment in some small detail in order to grow to its highest state of perfection; but we do not assume that the amateur has in mind any such thing as growing greenhouse flowers for exhibition, but rather that he wants a reasonable abundance of bloom over as long a season as possible — flowers for indoor decoration and to shame the neighbors. With a two-compartment house it is perfectly possible for any one beginning right now to have in flower for Easter all the various plants enumerated in the following tables.



Calceolaria

The temperatures given are ideal, and nearly all the plants can, as a matter of fact, be grown successfully with a difference of 5 degrees in either direction. Be it noted that the figures given are the night temperatures (all plant growing temperatures are stated at the ideal minimum); there will be a normal rise of 8 to 10 degrees at all times during the day; when the sun is strong and there is plenty of air on, a house can be allowed to run 20 degrees higher with no bad result to the contents. It is, in fact, beneficial; but note the conditions — strong sun and free ventilation. Those two factors must always be taken together.

PLANTS TO GROW TOGETHER

There are endless combinations of good things that can be grown in a one-compartment house. Experiment as much as you like within the proper limits of temperature, but don't try impossible combinations, such as calceolarias and roses. Bear in mind, ever, that in forcing plants you are tampering with nature and you can go only just so far.

With roses as the main feature, there can be cyclamen, bougainvillea, azalea, acacia, lilies, lily-of-the-valley, spirea, calla, freesia, amaryllis, begonia, and heliotrope.

Carnations being the principal crop (and taking a lower temperature), there could also be stocks, cinerarias, primulas, deutzia, forsythia, rhododendron, lilac, tulip, hyacinth, narcissus, snapdragon, mignonette and Marguerite.

TENDER PLANTS TO GROW FROM CUTTINGS

WITH very few exceptions these plants can be had in flower all winter, and by good treatment can be had in the very best of condition for Easter. Plants that have been producing all winter want plenty of food toward spring, when the days begin to lengthen. In winter when the weather is dull and the fire heat makes the plants move slowly, liquid feeding must be done sparingly, but during the spring you can use food very freely and get good results.

COMMON NAMES	NAME	WHEN TO PLANT	HOW TO PLANT	HOW TO HANDLE AFTER PLANTING	NUMBER MONTHS TO FLOWER	TEMPERATURE	REMARKS
Begonia	Begonia	Mar. or Apr.	Pot cuttings when rooted and grow on in pots	Keep shifting into larger pots as required. Use good light soil mixture with plenty of leaf mold	8 to 9	45° to 50°	Do not overwater and so get soil sour. Feed very lightly when flowering
Cherry pie	Heliotrope	Mar. or Apr.	Pot cuttings when rooted and grow on in pots	Keep shifting into larger pots as required. Use good rich soil; keep well sprayed	3 to 4	40° to 45°	Keep flowers pinched off during summer and feed well when flowering starts
Daisy or Marguerite	Chrysanthemum frutescens	Mar. or Apr.	Pot cuttings when rooted and grow on in pots	Keep shifting into larger pots when plants get potbound. Use good rich soil	8 to 9	40° to 45°	Keep growing. Feed freely when flowers appear. Keep plants in sunny place and well turned to flower evenly
Geranium	Pelargonium hortorum	Mar. or Apr.	Pot cuttings when rooted and grow on in pots	Keep shifting into larger pots as required. Use good rich soil and feed freely when growing. Spray well	3 to 4	40° to 45°	Keep flowers picked off and plant well pinched during summer for fine specimen by fall
Geranium, Martha Washington	Pelargonium domesticum	Mar. or Apr.	Pot cuttings when rooted and grow on in pots	Keep shifting into larger pots. Use good rich soil and keep well sprayed	8 to 9	40° to 45°	Keep potted on and ripen up in winter by partially drying; then repot and start into growth. Feed freely when growing

SEEDS TO BE SOWN FROM NOW ONWARDS FOR EASTER BLOOM

THE FIRST consideration here is the seed itself — that is to say, buy the best possible as it is cheapest in the end. Sow the seed in pans or boxes and when large enough to handle transfer the little seedlings to pots, using the smallest or thumb pots for the first potting, and shifting the plants into larger ones as they require it. Do not let the plants get potbound at any time, and do not repot until they have about exhausted the soil in the pot in which they are growing. When the pot is nicely filled with roots is about time for repotting. The shifts should be made from the small size into a 2½-inch or 3-inch pot; from that size to a 4-inch; then to a 6, and when necessary into a 7- or 8-inch, but usually a 6- or 7-inch pot will be sufficient. *Do not use too large a pot.* Pansies and schizanthus are often benched where only cut flowers are required. Plant pansies in a frame for winter flowers, but for the greenhouse pots are better because you can economize space by shifting them as occasion requires.

COMMON NAME	NAME	WHEN TO SOW	HOW TO PLANT	HOW TO HANDLE AFTER PLANTING	TIME TO FLOWER (MONTHS)	TEMPERATURE	REMARKS
Butterfly flower	Schizanthus	Any month	Sow in pans and keep potted on as they require	Use rich soil when potting and plenty of free drainage	3 to 4	45° to 50°	Can be made one of the best for decorative purposes. Use good rich soil and feed freely when growing. Use 6 in. pots for final shift
Calceolaria	Calceolaria	Aug. Sept.	Sow thinly in very light compost	Prick off in small pots and shift into larger ones. Don't overpot and don't overwater	6 to 7	45°	Very like the cineraria in its requirements. A little harder to handle when young. Be very careful about watering
Cineraria	Cineraria cruenta	Aug. Sept.	Sow seed thinly in light compost	Keep shifting plants into larger pots as they require it. Keep cool and well sprayed	6 to 7	45°	Does best when grown cool. Feed very freely when growing fast. Requires plenty of water but don't get soil sour
Cup and saucer	Campanula calycanthema	Aug. Sept.	Sow thinly in pans and keep well shaded	Prick off in pots and shift into larger ones. Use rich soil. Keep well sprayed	7 to 8	45° to 50°	Grow cool until flowering spikes appear. Then feed freely and give little higher temperature.
Cyclamen	Cyclamen	Feb. Mar.	Sow in pans very thinly. Use light soil	Prick off in small pots and keep potted. Keep a light free mixture at all times	8 to 9	45° to 50°	Requires careful watering and a free soil. Keep shaded during summer and well sprayed
Forget-me-not	Myosotis	Aug. Sept.	Sow thinly in pans or boxes	Prick off in solid beds in coldframe or cool greenhouse	5 to 6	40° to 45°	A good companion for the pansy and requires the same general treatment
Mignonette	Reseda	Aug. Sept.	Sow seed thinly and dib off in pots when large enough	Keep shifting into larger pots as required. Bench when plants are well rooted in 4-inch pots	3 to 4	40° to 45°	Use very rich soil and keep cool and well sprayed using liquid feed when growing. Grow at 40 degrees for best spikes
Stock	Matthiola incana	Any month	Sow in pans	Prick off in pots and keep potted on or plant into beds out of 4-inch pots. Use good rich soil	3 to 4	45° to 50°	Good subject in pots or can be grown in quantity for cutting. Be sure to get good seed or you will have all single flowers
Snapdragon	Antirrhinum	May, June	Sow thinly and dib off in pots when large enough Seed or cuttings	Keep growing during summer and dry slightly in late summer to ripen wood; then plant in bench	9 to 10	40° to 45°	Use rich soil and feed freely. Keep flowers pinched off when growing during summer. Keep staked
Sweet pea	Lathyrus	Aug. Sept.	Sow seed in solid beds cool greenhouse must have plenty of head room	Keep thinned and well cultivated. Use good rich soil and spray frequently	5 to 6	45° to 50°	If sown in Aug. should be in flower by Christmas and flower all winter. Feed freely when flowering
Pansy	Viola	Aug. Sept.	Sow thinly in pans or boxes	Prick off in solid beds in coldframe or cool greenhouse	4 to 5	40° to 45°	Grow cool and use rich heavy soil for big, long stemmed flowers. Grown in pots for house decoration
Primrose	Primula	April May	Sow in pans or pots thinly	Prick off into small pots and keep potted as they require it. A 6-inch pot should be large enough to finish	6 to 7	45° to 50°	Can be fed freely while flowering on liquid feed. It will start blooming in November and bloom all winter

GROWING PLANTS TO BE FORCED ALONG

ALL these shrubs or woody plants are very easy to force. Most of them are hardy and when received from the dealer are usually plunged out of doors and mulched until wanted for forcing. When they are first brought into the greenhouse they should be watered rather sparingly until root action starts, after which they can be watered quiet liberally, using liquid manure when the flowering spikes appear. When first brought in they should be sprayed often, which has a tendency to soften the wood and helps them "break" or start. Buy pot grown stock ready for forcing. Stock can also be bought in spring and planted in pots, keeping it outdoors in summer. This is by far more troublesome but less expensive.

COMMON NAMES	NAME	WHEN TO SECURE PLANTS	HOW TO PLANT	HOW TO HANDLE AFTER PLANTING	TIME REQUIRED TO FORCE	TEMPERATURE	REMARKS
* † Acacia	Acacia	Sept. Oct.	Use rich soil but plenty of bottom drainage	Keep in cool greenhouse at 45 deg. for flower during March or April	Don't force; they don't like heat	Maintain about 45°	Can be planted out in the border in cool conservatory
* † Azalea	Azalea	Sept. Oct.	Use plenty of leafmold; pot very firm, using potting stick	Keep in cool temperature, about 45 deg. until ready for forcing. Keep well sprayed	10 to 12 weeks	Starting 45°, finish 55°	All the various types, such as Ghent, Ponticum, Amœna, Sinensis and Indica force well
* † Bougainvillea	Bougainvillea	Sept. Oct.	Use rich soil but plenty of drainage	Keep in cool greenhouse or on dry side when resting. Spray freely when you start forcing	6 to 8 weeks. Water abundantly when forcing	Resting, 45°; Growing, 55°	Grand for planting out in greenhouses; rest up during winter and prune and start growing in late June. Give liquid food when growing
Deutzia, dwarf	Deutzia gracilis	Sept. Oct.	Rich soil	Cool greenhouse; water sparingly while resting	4 to 6 weeks after starting	Never over 45°	Excellent forcing shrub for pot culture, and a very easy forcer
* † Genista	Cytisus	Sept. Oct.	Use light soil that drains well	Keep temperature 45 deg. until about 8 weeks before wanted; then force at 55 deg.	8 to 10 weeks	Start, 45°; finish, 55°	Spray for spider but don't over-water. Don't repot any oftener than necessary
Golden bell	Forsythia	Sept. Oct.	Rich soil	Cool greenhouse; never force at more than 45 deg.	Will flower Mar. or Apr. with no forc'g	45°	Needs a very low temperature to keep back. Can be plunged outside until needed
*Golden chain	Cytisus laburnum	Sept. Oct.	Use rich soil, plentiful drainage	Cool greenhouse, water sparingly while resting; freely when growth starts	6 to 8 weeks after starting	Resting, 45° Growing, 55°	Forces easily and is a grand subject for Easter
* † Heath or heather	Erica	Sept. Oct.	Very light, peaty soil Must be always sweet	Cool greenhouse, water sparingly to ripen wood thoroughly	10 to 12 weeks after starting	45° to 55°	Very fastidious plant. Hard to force even by specialists
*Hydrangea	Hydrangea	Sept. Oct.	Rich soil, requires abundance of food always	Cool greenhouse kept at 45 deg. Keep well sprayed and fairly moist at roots	8 to 10 weeks	45° to 50°	Various shades of blue or pink, or can be colored by using in water, alum, sulphate of iron, etc.
Japan quince	Cydonia	Sept. Oct.	Rich, heavy soil	Plunge outside until 4 to 5 weeks before wanted	4 to 5 weeks	45° to 50°	Beautiful pot subject that anyone can force. Water and spray freely
*Laurel	Kalmia	Sept. Oct.	Rather light soil with plenty of leaf mold	Cool greenhouse. Keep well sprayed but not overwatered	10 to 12 weeks	45° to 55°	Excellent pot plant and by far too little used. Forces easily from good pot-grown stock
*Lilac	Syringa	Sept. Oct.	Rich soil	Plunge outside until 6 or 8 weeks before wanted	6 to 8 weeks	45° to 50°	Lilacs are better if not forced too fast. If forced quickly flowers don't last
*Magnolia	Magnolia	Sept. Oct.	Heavy soil but plenty of drainage	Plunge outside until 4 weeks before flowers are wanted	3 to 4 weeks	45°	Can be had out of doors as early as April 1st, but is grand in pots or tubs for decoration
Plum, cherry, peach, apricot, almond	Prunus	Sept. Oct.	Rich soil	Keep plunged out of doors until 4 to 6 weeks before wanted	4 to 6 weeks	45° to 50°	All these subjects are fine in pots and are all easy forcers. Plenty of water while growing
*Rhododendron	Rhododendron	Sept. Oct.	Soil equal parts leaf mold and fibrous loam	Keep in cool greenhouse or storage pit, moderately moistened	10 to 12 weeks	45° to 50°	Force slowly and keep plants turned to insure even flowering. Water freely
*Roses	Wichuraiana and multiflora hybrids	Sept. Oct.	Rich, heavy soil	Keep plunged out of doors until about 12 to 14 weeks before wanted	12 to 14 weeks	45° to 60°	Climbing roses are easily forced. Tie down the branches or they will break at end. Feed freely
Roses	Hybrid Perpetual	Sept. Oct.	Rich, heavy soil	Keep plunged out of doors until about 10 to 12 weeks before wanted	10 to 12 weeks	45° to 60°	H. P. roses are easy forcers; feed freely after growth starts
*Wistaria	Wistaria	Sept. Oct.	Rich soil	Plunge outside until 4 to 6 weeks before wanted	4 to 6 weeks	45° to 50°	Easily forced. Feed freely when growth starts

** These can be lifted from the open border and forced, need not be pot-grown for forcing.* *† Not hardy, and must be kept in a storage pit or cellar until forcing time.*

DORMANT BULBS TO START IN HEAT

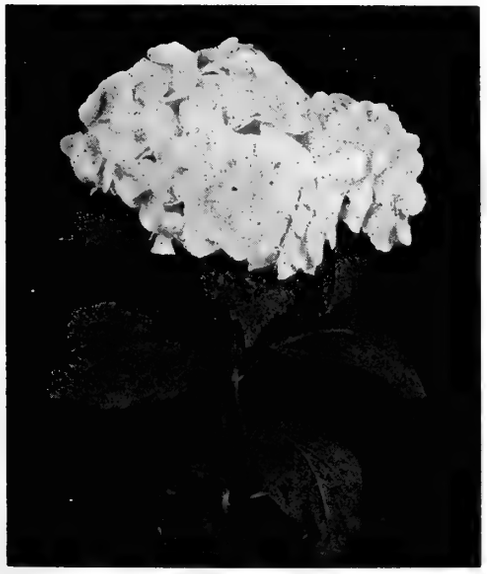
GENERALLY speaking, bulbs are easy prey for the beginner. All are easy forcers but Amaryllis requires very skilful handling. Bulbs give little trouble, and as they occupy bench space for such a very short period, they add tremendously to the output of greenhouse. They will produce fair results under conditions so averse that other plants would fail. Don't go around shopping to see how cheaply you can buy bulbs. Get the best. The flowers are already in the bulbs when you buy them; all you do is to develop the flowers. If the flower is not there, or if disease and poor cultivation have weakened it, the most skilled cultivator cannot produce good flowers. Flats are used in all cases where the flowers are to be cut, but for decorative work the bulbs may be planted in pots or pans. After planting bury the bulbs out of doors to develop roots; when thoroughly rooted they can be brought in to force. A heavy mulch over the trench where they are buried makes it easier to get out the bulbs when wanted. When first brought in they are placed under the benches, which causes them to "draw up" as the gardeners call it. In reaching for the light they develop stems, and long stems are valuable to flowers. But don't overdo, or the stem will get weak. No definite rule can be given as to when bulbs should be brought to the light. Bulbs require more water when in growth than any other class of plants, excepting aquatics. Use plenty of liquid food when the flowering shoots first appear. The only exceptions to these general conditions are noted below:

Callas are usually potted or benched in August or September and kept growing, feeding freely when flowering starts. Lilies and freesias are usually placed in a storage pit or out of doors and covered with a couple of inches of ashes. When growth starts they are brought into the cool house and later shifted to the warm compartment. Spireas are usually received in late fall. Pot up at once and place out of doors in some sheltered place to rest. After resting for five or six weeks they can be brought in and forced. Lily-of-the-valley can be forced at any time; cold storage pips the most satisfactory; plant them close together in good clean, sharp sand and place them in warmth at once. Water several times a day and spray at the same time. Keep dark until there is a good length of stem; then bring them out to the light to color.

Amaryllis require a long season of rest during which time they must be kept quite dry. When wanted they should be repotted, or a good heavy mulch of rich soil placed in the old pot, and brought into heat. The art of growing good amaryllis is not in the actual forcing but in the proper ripening of the bulb preparing it for its next forcing. This is done by gradually reducing the water and temperature until the resting period, at which time the bulb should be firm and root action at a standstill.

COMMON NAME	NAME	WHEN TO PLANT	HOW TO PLANT	HOW TO HANDLE AFTER PLANTING	NUMBER WEEKS TO FORCE	NECESSARY TEMPERATURE	REMARKS
Belladonna lily	Amaryllis belladonna	Aug. Sept.	Pots not too large. Give small shift	Place in cool greenhouse until about June 1st	12 to 14	55° to 65°	Feed freely when flower appears, but don't overwater
Calla lily	Richardia Æthiopica	Aug. Sept.	Pots of solid benches for cutting	Water sparingly until growth starts then bring into greenhouse	10 to 12	55° to 65°	Feed and water freely when growing, using plenty of liquid manure. Likes a high temperature
Daffodil	Narcissus	Sept. Oct.	About 4 inches deep. Pots for decorating flats for cutting	Bury in trenches or place in coldframe and cover with about 6 inches ashes	6 to 8	45° to 50°	All types force well. Better buy a variety of them
Freesia	Freesia refracta alba	Aug. Sept.	Pans for decorative work, boxes for cut flowers	Place in storage pit and cover with about 2 inches of ashes. Remove to greenhouse when growth shows	16 to 20	50° to 60°	Will stand plenty of heat, but the best quality flowers are grown at 50 to 55 deg., using plenty of food when flowers appear
Gladiolus	Gladiolus Colvillei	Nov. Dec.	About 3 inches deep in pots or boxes, or in greenhouse bench	Place in storage pit or cool greenhouse. Force slowly.	12 to 14	45° to 50°	The Colvillei type can be forced all winter. The large flowering type can be had for Easter by potting up in January and growing on briskly
Hyacinth	Hyacinthus	Sept. Oct.	About 4 inches deep. Pots for decoration; flats for cutting	Bury outside in trenches or place in coldframe and cover with about 6 inches of ashes	6 to 8	45° to 50°	Both the Roman and Dutch types are good for forcing. The former excels for cutting; the latter for pot work
Iris, Spanish	Iris Xiphium	Sept. Oct.	Boxes for cutting; flower uncertain	Place in cold storage pit or cool greenhouse until growth starts	12 to 14	50° to 55°	Fine flower for cutting but a very uncertain bulb to force
Lily, Easter	*Lilium longiflorum	Aug. to Dec.	Pots or benches; Pots are best except for commercial growers	Place in storage pit and cover with about 2 inches of ashes until growth shows	16 to 20	45° to 60°	Can be grown much warmer if necessary but fls. keep better at lower temp. Low temp. is for stunting. Also grown from cold storage bulbs
Lily-of-the-valley	Convallaria majalis	3 weeks before wanted	Plant close together in clean, sharp sand	Start in growing temperature at once	2 to 3	55° to 65°	Place under benches to develop long stems. Bring out to light when flower appears. Cold storage pips for the safest for forcing
Spirea	Astilbe japonica	Nov. Dec.	Pots. Use plenty of good soil	Place outside until Jan. 1st. Then bring in cool greenhouse. Start gradually	8 to 12	45° to 60°	Grand pot plant also useful for cutting. Bulbs need rest. Don't try to force when you receive same. Feed freely
Tulip	Tulipa	Sept. Oct.	About 4 inches deep. Pots for decoration; flats for cutting	Bury outside in trenches or cover with about 6 inches of ashes	6 to 10	45° to 50°	All types are good spring forcers such as Darwin, Parrot, Gesneriana, and double flowering. Also the early single

** Other lilies such as Formosum, speciosum, etc., respond to like treatment*



The new French hydrangeas are remarkable for their large flowers

The old time Martha Washington geranium (Pelargonium) is very showy

The florist's spirea, really hardy, is indispensable for its white feathery plumes

Building a Greenhouse?—Facts to Help You—W. R. Cobb, New York

YOU want to build a greenhouse, not a large one but just a simple little flower room — not too small to be impracticable, but just large enough to putter around in and yet show good results? How shall you determine just how to go about it, where to place it, etc.? Of course circumstances will largely control many points, but there are certain basic facts that the builder should know, and to which other things must be adjusted.

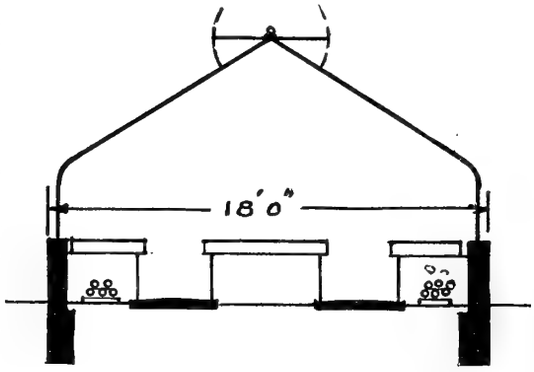
The greenhouse must not be shaded by any trees or other objects in the winter time. It may be attached directly to a dwelling, garage, stable, or other building or it may stand by itself in the garden. When attached to some building having a cellar, it is possible to save the expense of digging one for the boiler of the heating apparatus.

Leanto greenhouses are the least expensive to build and give good results, but are not as good as full span houses.

The ideal width for a small greenhouse is 18 feet. This width gives ample space for three plant beds or benches, one on each side and one in the centre. Good results are however obtained in houses 16 feet and 11 feet wide. The narrower houses cost more in proportion, and the atmospheric conditions are not as good as in the wider houses. The smaller the house the more the attention needed in ventilation, watering, etc.

The length of your house depends on the room available and on the amount you care to spend. The longer and wider the greenhouse, the less it costs in proportion. Twenty-five feet is a good length to start with for real efficiency, and you will be surprised at the quantity and quality of flowers that can be grown in a house of this size. This makes the ideal width, then, 18 x 25 ft.

It is usual to build a concrete, brick, or stone wall as a foundation to support the sides and roof, this wall to extend about 2 feet 6 inches above the inside floor level of the greenhouse. It is possible, however, to dispense with the masonry walls. In this case, the rafters of the steel frame are carried below the surface of the ground and embedded in concrete. The side walls from the ground level to a height of 2 feet 6 inches can then be built of boarding covered on the outside with shingles or clapboards. Frequently, a concrete wall 4 inches thick is substituted for the wood construction on the sides. In either case, the stability of the greenhouse does not depend on these side walls — they are simply mediums to keep out the weather.



Eighteen feet is the most practical greenhouse width. It spaces to advantage in all directions

The roof and sides of the greenhouse should preferably be built with a steel frame lightly capped with wood. This costs but little more than all wood, but is far lighter and more enduring. In fact, it ought to last a lifetime.

The curved eave type presents a graceful appearance but gardeners generally concede that it does not grow any better flowers than a greenhouse with straight eaves having a cast iron gutter at the junction of the side walls and roof.

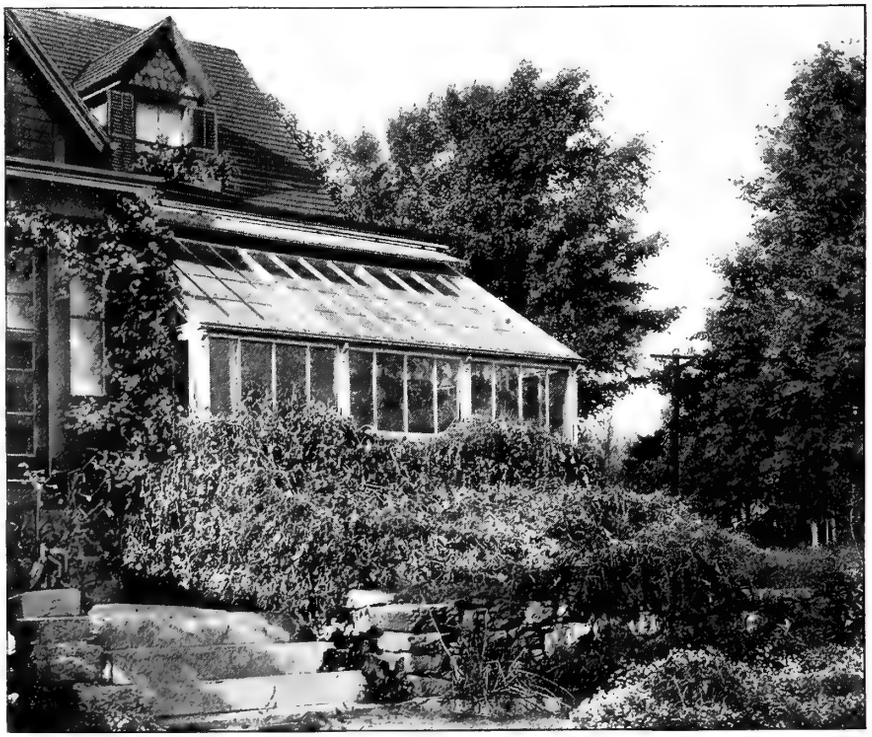
The best glass is what is known as "A quality, double thick." Fix this with the end of each pane lapped over the one below a quarter of an inch. The glass is simply bedded in putty and not back puttied as in an ordinary window. This makes a tight roof and leaves no putty on the outside to be torn away by rain and ice.

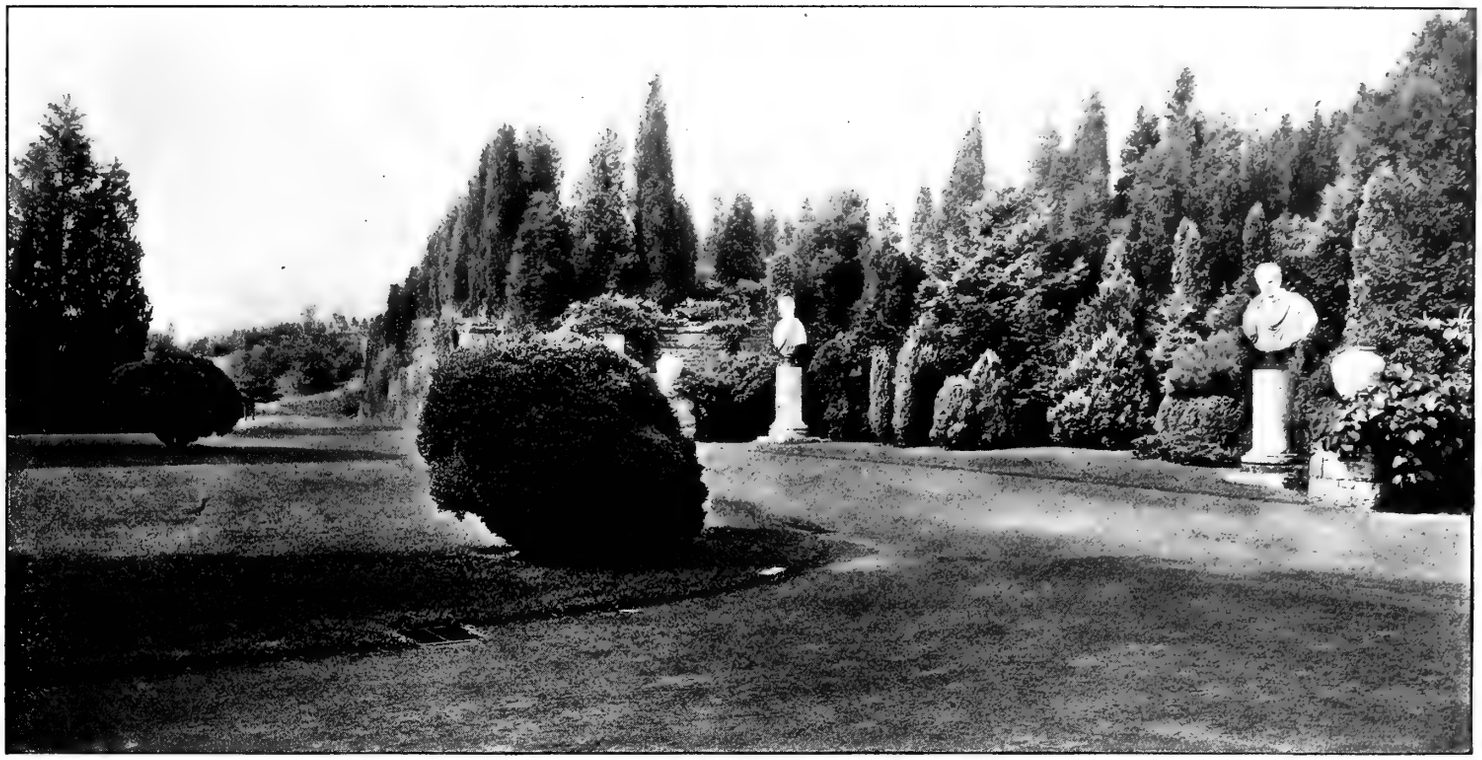
One line of ventilating sash at the ridge will answer in houses up to 18 feet wide. Larger houses should have two of these, each to consist of a line of glazed sash about 30 feet wide hinged to the ridge and extending the entire length of the house. The most satisfactory way of operating these ventilating sash is to use the simple but effective apparatus made for this purpose by builders of greenhouses.

The plant benches may be built entirely of wood, a combination of wood and steel, entirely of cast iron, tile and steel, or steel and slate. The all wood bench is the cheapest; the only advantage in using any other type is in the lasting qualities. The benches should be arranged to hold about six inches of soil. This allows you to plant directly in the beds, just as you would in the garden; or you can omit the soil from the beds and set the plants in pots on the benches.

Hot water, because of its more uniform heat and less intensity, has proved the best medium for heating a greenhouse. The pipes should be placed under the plant benches on the sides and connected to a hot water boiler located in the workroom cellar, or in that of any adjoining or nearby building. The size of the pipes should not be less than two inches and may be increased to four inches according to climatic conditions and the requirements of the plants. The proper heating of a greenhouse is most important, as upon this depends, to a great extent, its success. It is really the province of a greenhouse engineer to arrange this detail. Different plants require different temperatures, but the average is 55 degrees to 60 degrees when the thermometer registers zero or below at *night*, as frequently during bright days the sun furnishes all the heat required.

Houses for growing fruit, large palms, aquatics, etc., require special treatment. The greenhouse manufacturers employ a corps of experts and they are always at the service of any one who contemplates building.


Add a little greenhouse to your dwelling and defy the seasons! For such a situation the leanto is well adapted



"An evergreen spot where busts of ancient emperors stand out against many-textured conifers, domed box, and pencil-like red cedars that recall the heaven-ward pointing cypresses in classic Italy"

A Summer Vacation Among Eastern Gardens — By Lucullus, Jr.

LAST CONFESSIONS OF A VETERAN GARDEN GLOATER WHO HAS DISCOVERED AN ARTISTIC WAY OF LOAFING, WITHOUT GETTING HOT, THINKING, OR LEARNING ANYTHING USEFUL

NEVER again shall I be an "author." My first and only previous indiscretion was a wild burst of confidence in THE GARDEN MAGAZINE for August, 1912, which bore the innocent title of "A Vacation Among New England Gardens." Since then the very life has been pestered out of me by people who want itineraries.

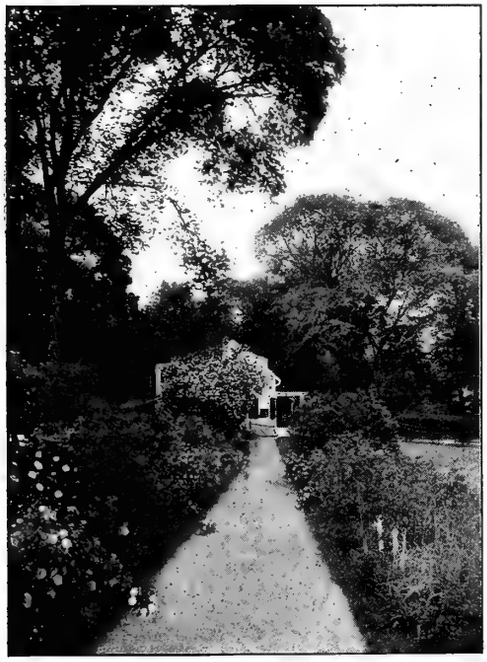
I dread opening a letter nowadays, lest my eyes crinkle at the loathed sight of some such threadbare phrase as "a fortnight among the famous North Shore gardens," "a tour of the celebrated gardens around Philadelphia," "a sniff of century-old gardens," "siestas among seaside gardens."

Seriously I purpose to slay, once for all, all these invaders of my peace. I will make you a tour of the best gardens in the universe. Then I will buy 1000 copies of the number containing my article and install a private secretary who can forge my signature to perfection. She will sort out all the crested envelopes that breathe an aroma of gardens, retort with a few pages of illegible rapture, send them under separate cover the "very thing you want," and *voila tout!* Getting off pretty cheap, eh?

The best gardens in the world are those that come unbid in dreams — the ones that solace you in hours of sleeplessness or of pain. I see the Eastern gardens through a mist of years, and I write only *of their spirit*, scorning all practicality or accuracy of detail. The garden that comes oftenest to me in time of need is one of the oldest and simplest in America — the finest survival of seventeenth century times, when the Dutch still ruled Manhattan. It is the Van Cortlandt manor at Croton. As I close my eyes and shut out the work-a-day world, I can see the old house from my skiff on the Hudson. It stands there on a triangle formed by two rivers, just as Manhattan did, and Charleston, and all the early settlements. For, by this arrangement, the colonist could see everyone who approached, whether friend or foe, and it was only necessary to make a wall across a peninsula, to have good protection from the Indians. Ah, but it was a stout old fort, the Van Cortlandt manor, built in 1680. The loopholes through which one shot at Indians are still there. And thereby hangs a tale.

Once upon a time — to wit, the dread Victorian era — when everything baleful in art occurred, except the cubists, one of the owners of the manor house got tired of its fort-like appearance, and thought it ought to look like a suburban villa or something. So she covered all the fascinating Dutch stonework with a yaller stucco which was designed to make the old fighter look tame and respectable and even natty and up-to-date. In sealing up the past the plasterers, of course, hid all the loopholes. But when the present generation came into possession, the respect for old things was in full tide again, and Miss Van Cortlandt removed the false skin, restored the Colonial stonework, and brought to light the ancient loopholes. Then, *mirabile dictu*, she found a bird's nest in each loophole — perhaps thirty in all, and eggs in each!

I love to peep around the corner of the manor house and see its mate — a simple, sturdy, well proportioned house built about 1682. It was the old ferry house, where the Croton was crossed in the early days. The garden is simply a direct walk between the two houses, bordered on both sides for perhaps 150 yards by ancient shrubs and old-fashioned flowers. On one side you look up toward a magnificent hanging wood, of tropical richness and variety. On the other you look toward rush-lined river, over mellow meadow, and betwixt murmuring elms. Flowers of a century ago have escaped from the garden and run wild upon the banks. In the shade of trees the lance-leaved day lily rears thousands of purple spikes. The views along this simple walk change every step or two, for these peaceful landscapes are continually being seen through new frames, e. g. a pair of ancient rose bushes. The hero of the garden is a mighty bush of



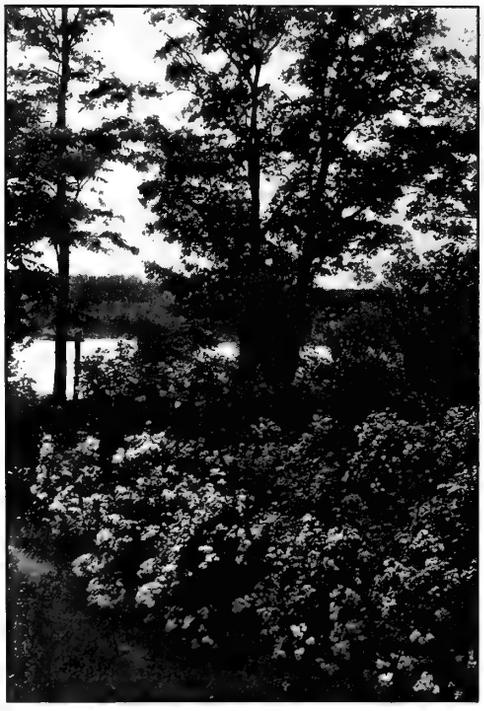
"I love to peep around the corner of the manor house and see its mate — a simple, sturdy, well proportioned house built about 1682. The garden is simply a direct walk between the two houses, bordered on both sides by ancient shrubs and old fashioned flowers"

the York-and-Lancaster rose, the most celebrated variety that has survived from pre-revolutionary days.

Speaking of roses reminds me of the one rose garden that really satisfies my soul — the Ward garden at Roslyn, Long Island. I know thirty rose gardens on which fortunes have been spent, but to me they are all nightmares. My recollection of them is a chamber of horrors, containing three main types among the criminals. First, are those rose gardens which are insufferably stiff, by reason of their insistent geometry. Some of these are terraced to distraction, and others are flat as a pancake, putting all their goods in the show window, and leaving nothing to the imagination. The second type of murderous rose garden is a graveyard of cold inhospitable marble — backless benches on which no one can ever sit without taking cold, waterless well curbs, and a general air of pretense and fake. My eyes ache at the memory of the August sun flashing upon these blinding reminders of the antique shops. The third type of rose garden is that masterpiece of gaudiness, the "rosery," which is a place apart that is locked up forty-eight weeks of the year in order to make the biggest possible show during the remaining four. It contains nothing but roses, and exhibits them in such a way as to make a flower of sentiment appear only as a flower for display. The detestable heresy that "roses do not belong in a garden, but must be grown in a place apart" originated in the same period which gave an eager world the hoop skirt, the Mansard roof, the false front, the cast-iron stag, jig saw ornamentation, corkscrew curls, b'iled dinners, infant damnation, and bedding plants.

On the face of it the proposition is perfectly clear. A garden without roses is like a story without a point or life without sentiment. As a queen looks best when surrounded by her courtiers, so every flower needs a foil. In the Ward garden the queen of flowers is surrounded by many old-time favorites — larkspurs, canterbury bells, pinks, lemon lilies, irises, and others of delightful memory. There are eight hundred varieties of roses in the Ward garden — a collection big enough to ruin all sentiment and repose in any ordinary garden, for a collector's testing ground is usually a graveyard in which the stakes and labels loom more important than the plants. But the Wards have a system by which all labels can be abolished in a few minutes and you may float on floods of sentiment, if you wish to. And, then, what a setting for a rose garden! You look down toward salt water through shimmering sprays of locust foliage, and it is all so secluded from worldly things!

To the lover of old plants the spot of supreme interest on Long Island is Dosoris — a forty-acre tree garden founded by Charles A. Dana. A garden, to thoughtless young folks is a spot of bright color — a mass of fleeting flowers. Alas, that such a garden goes to ruin the first summer that we go to Europe. As we grow older taste refines and love of permanence becomes dominant. Just in the worst period of American taste, right after the Civil War, Dana went to England and got from Kew the idea of a permanent garden — a collection of evergreens that would outlive



"What a setting for a rose garden! You look down toward salt water thro' glimmering sprays of locust foliage and it is all so secluded from worldly things"

The Breese garden at Southampton. "The wonder of it is that so much charm can be had in any flat place. . . . . The views are all within a rectangle, enclosed on three sides by a pergola"

several generations and grow in grace every year. He sought a city of refuge for his garden. An island — a whole island — is admirable for the purpose. Mark Twain told why. One can banish the telephone, and if a messenger approaches there is time to slay him, since he must come by boat. A "garden," they say, means "an enclosed place." Well, an island is an enclosed place, for it is surrounded by water. A forty-acre island is big enough for a house and all the necessaries, including kitchen garden, greenhouse, flower gardens, a vista of the Sound, a lawn view, and a collection of evergreens. There are military windbreaks to shelter this blessed haven — battle scarred pines from Austria and Scotland, and stately white spruces from our northern woods. In the sunny lee of their strength thrive some of the most precious features of southern climes — cedar of Lebanon and blue Atlantic cedar, the Big Tree of California, pendulous Himalayan spruce, Mexican pine, and nature's finest expression of her arborvitæ thought — *Thuyopsis dolobrata*. The gardening literature of America is saturated with references to Dosoris and pictures of its beauties. It should be preserved forever as a monument in the history of American horticulture and landscape gardening.

There is only one other garden on Long Island that I permit to come again and again to my mind. The Breese garden at Southampton is always a welcome guest in my memory. The wonder of it is that so much charm can be had in any flat place. There are no views toward hills, woods or water. The views are all within a rectangle, enclosed on three sides by a pergola. The vines change with every post or two.

and thus every flower bed is seen many times through different moods. For instance, at the moment of your visit, the dominant note may be a bed of orange day lily. Ordinarily it is coarse in color and texture, especially in the blazing sun, but there is witchery in this shady pergola. The arching vines protect like eyebrows from the glare. And now you see your spot of orange framed by falling curtains of Virginia creeper. Two steps farther and you glimpse it through a veil of panicled clematis. Coming nearer, you get a full view of its bold form and color, framed by strong outlines of classic grape. Retreating, you turn as toward a sunset, and the orange glow sifts through a screen of trumpet creeper — a screen so dense that form of flowers is excluded, and only bodyless color, like a cloud floats through. Here is the great service that the Breese garden has rendered to American art. It shows how to make a multitude of exquisite little views where no big views are possible, and this too on hopelessly flat land, where terraces would be costly and out of place.

Of the great formal gardens I love but two — Weld and Blairsden. Weld is admirable for its flowers; Blairsden for its garden magic — the kind that is independent of flowers. The great show features are the pool and the staircase, but there are two minor places where my fancy habitually lingers. One is an evergreen spot, where busts of ancient emperors stand out against many-textured conifers, domed box, and pencil-like red cedars that recall the heavenward-pointing cypresses in classic Italy. The other spot is a walled garden that opens from a dining room. The brick paths are soft and grateful underfoot and green with moss. Trim box encloses simple beds of old-time, lasting flowers. A wall of foliage towers high above the mellow walls of brick. There are sweet odors, as of thyme and balm, and there are gorgeous butterflies flitting idly in the sunlight. Over all broods an atmosphere of mellowness and peace. The silence is unbroken save for the tinkling of water, as the iris-colored drops fall in the central fountain on whose rim perch a group of expectant birds. Stone birds, 'tis true, but the very flower of the sculptor's art. There is a sacredness in such a garden — an atmosphere of home life more precious than anything that gold can buy. For it is at such shrines of beauty that strong men refresh their souls and gird themselves for the battles they are sent to fight.

Well, well, I must have been dreaming. I came to scoff and remained to pray. Never mind, this is my last offence, frivolous or sincere, I shall never "take my pen in hand" again. "The best six gardens," say you? I feel like Paris delivering apples of discord, but here goes: Blair, Breese, Dana, Van Cortlandt, Ward — that's five. The sixth one I retain!

"The silence is unbroken save for the tinkling of water, as the iris-colored drops fall in the central fountain, on whose rim perch expectant birds"

Keeping Hens in the Backyard Garden—By Roger W. Babson, Massachusetts

[EDITORS' NOTE:—*This is the fifth article in Mr. Babson's series, beginning in the April number, in which the economic value of the backyard in relation to the "Cost of Living" problem is discussed. The final article will appear in the September number.*]

AFTER giving much thought to this whole question of reducing the cost of living through backyard gardens, I am most strongly convinced that the solution is largely an individual one and in order to increase production, it must be made both popular and profitable for people who are now only consumers, to become producers. For the family in the city complaining of the continual increasing cost of living, it becomes them to go out into the suburbs, secure a place with land sufficient to have their own garden and supply their table with good vegetables, fresh eggs and poultry from their own land and hen house. No arguments are necessary to convince the housewife that an independent supply of fresh eggs and poultry would be very desirable. Therefore, I do not feel this series of articles on the backyard will be complete without one article on the hen house.

With the many volumes which have been published and the hundreds of columns which the papers and magazines have contributed in advocating the possibilities open to the man or woman of limited capital in the poultry business, one would think that this line would be very much "overworked." The facts of the case show the very opposite, for however rapidly the supply increases, the demand seems to increase even more rapidly. So long as this law of "supply and demand" applies, there need be no apprehension as to the continuance of high prices for eggs and poultry.

Regardless of the fact that thousands of people have been attracted to the poultry business in the past few years, the price of fresh eggs continues to reach a new high level each fall. For three months last winter the retail price for fresh eggs in New York City was quoted at seventy-five cents per dozen.

Few people realize the importance of the poultry industry when considered in connection with the total value of other farm products. Our corn crop stands out alone as the only crop larger in value than the total poultry product in the entire United States. We hear much about the value of our wheat or cotton crops, but they are really secondary in value to our poultry product. The United States census of 1900 reported the value of poultry products for that year as $280,000,000; while the report for June 30, 1910, shows $850,000,000, a most remarkable increase.

In 1911, Secretary Wilson of the Department of Agriculture, Washington, D. C., in an address said, "We can hardly employ ordinary arithmetic in keeping track of the growth of the poultry industry. It has developed more rapidly within the last decade than any other of the big agricultural industries of this big and wonderful country of ours." Nevertheless, the increase in consumption in our cities has been even greater than this marked growth of the industry, consequently the present high prices.

However, it is not my object here to discuss the possibilities of the "hen business" as an industry of promise, but rather to show the "in-town-family," perplexed with how to make the salary do the same work it did five or ten years ago, that the answer lies in finding a modest home with a yard large enough to have their own garden and hen house! In fact, the only solution lies in partially changing their station from the army of consumers to the depleted army of producers, thereby performing an economic benefit to their country as well as to their family for which they will be duly rewarded.

Unfortunately, I have not had personal experience in keeping hens; but I have observed the work of others along practical lines, and it should be of value to city readers to have a description of a model hen house, as constructed by one of my salesmen (without the services of a carpenter), in his backyard near my Wellesley home, during the past spring. This house in size and arrangement will fill all requirements to carry out the suggestions as given in my title.

The material in this house cost $35, but it could be constructed for somewhat less, if paper were used for the roof covering instead of shingles. The outside dimensions are 8 x 16 ft.; three full length windows in the side facing south; full size door in one end, with exit to yard for hens in opposite end of house. The sills and upright posts were constructed of 4 x 4 and joists and rafters 2 x 3 stock. It was boarded in with matched boards, and 1½-inch battery strips were nailed over the joints of these boards to make the house warmer in winter.

In this house, a space was partitioned off just inside the door 4 x 8 and a board floor laid, making this space serve as a small grain room and a convenient place to keep garden tools, etc. I noticed that he also ran his roosts and drop boards around the side opposite the windows and along the inside partition, giving a space under the latter section for nests. A board on hinges enables him to reach the nests from this grain room without the necessity of going into the space given to the hens, a convenience very much appreciated by the women folks, who are always interested at least, in gathering up the eggs!

A good way to begin "keeping hens" in a small way is to buy the chicks in the spring from the large dealers who have stores in all our cities. These incubator chicks (about one week old), sell for $15 to $20 per hundred, according to the breed and the time of the season. If one desires to "winter" twenty-five pullets, it would be safe to start with fifty of these chicks to allow for accident and the goodly number of roosters which are appreciated about Thanksgiving, if not in the early morning hours! The last of April or the first of May is about as early as chickens (without a hen) can be put out-of-doors in New England without some kind of a brooder. However, these chicks should begin to lay the last of October or first of November.

The mother of one of my stenographers has not only been very successful in poultry raising, but has been enabled to enjoy a very profitable garden on account of the hens. An honest and careful record of receipts and expenditures has been kept by her and the period covered for this report was from October, 1911, to October, 1912. The largest number of hens kept at any one time was 350, consisting of 200 hens and 150 pullets. From this number, they have received in one year 20,516 eggs, which sold at a total of $749.87. Adding to this the money received for fowls and broilers sold, the total receipts were $888.80. Out of this the expenditures for grain and food was only $433.97. which would indicate a profit of $454.83.

By analyzing this on a per-hen basis, I find the following figures:

$2.54 total income per hen.
$1.23 cost to feed per hen.
$1.31 net profit per hen.

This is probably below the actual results as this is assuming that they kept 350 hens the entire year when as a matter of fact, they did not keep as many as that. At the time this report was submitted, the stock had been reduced to 264. However, this interesting report from a woman whom I know, is only half told in the above figures, for she has reported to me with some detail how the valuable fertilizer obtained from these hens has enabled her husband to cultivate in his spare moments, a formerly barren field adjoining their yard and from which garden they have supplied their table all summer with fresh vegetables, as well as being able to sell a considerable amount.

In this particular case, it might seem that this was developed on a sufficient scale to be considered a "business" rather than a mere "economy;" but I know that the husband has regular work away from home each day; while the daughter is in my employ at Wellesley. In reality, these hens are a "side line" largely conducted by the woman, in her own yard, in a suburb of Boston noted for the beautiful streets, spacious lawns, and imposing mansions.

In observing the monthly record of

eggs produced in the report above quoted, it is of interest to note the month or months when eggs are most plenty and adversely the month when eggs are scarcest and consequently highest in price. Many people have already observed and more will, that the month of March is the big egg month and the month of November is the month when eggs are scarce and high. What would this indicate to our suburban amateur hen-man? Obviously, in March he should keep all the surplus eggs and preserve them in crocks with the solution commonly called "water-glass" (obtained at any drug store for twenty-five cents) then in November when the price of eggs is high and the supply short, he will have plenty of eggs for home use and be enabled to sell the few fresh eggs his pullets lay at a very good price.

The matter of limited space in the backyard should be no drawback, as it may be overcome by regulating the size of the house and the number of hens kept. The old idea that hens require extended range and large house quarters has given way to the more recent discovery that the most important thing is the quantity and variety of diet. In fact, the efficiency engineers tell me that the hens lay best when shut up and forced to attend strictly to business!

The conclusion is simply this. If you are dissatisfied with present conditions, with continually increasing prices for the necessities of life, first determine whether you are content to be a consumer only, or are willing to become a producer of some of the lines which go to make up these high prices. If you find that you are only a consumer, begin at once to change your position to the side of the producer, for it may be a long wait before any marked or permanent relief from tariff revision or other sources, promised by the politicians before election, is realized. The high prices for food stuffs is world wide, and that is why everyone should seek the first solution in his own home and backyard.

On the other hand, let us not look at the fact that the old farm is *not* profitable; but rather that the backyard is more profitable. The farmer is not using improved methods for "intensive farming," while the young amateurs are using these newer and better methods. Let us all, therefore, seek to develop and get all the possibilities out of our backyards whether they are large or small. Whether our garden must be only a hotbed in the lawn, or the acre vacant lot adjoining, it is our duty as a citizen to use whatever we have. This applies equally well in the matter of keeping hens, for if it can't be five hundred hens, we can keep twenty-five. In fact, from the statistics which my organization has collected, there is a far greater percentage of profit in twenty-five hens than in five hundred hens; while, as you get up into keeping thousands of hens, profits seem to disolve in losses. In short, a few hens are very profitable; while a large number are usually a source of loss. Therefore, I not only urge you to have a "backyard" garden, but I urge you to stop there and have no greater!

His First Garden —From A Suburbanite's Diary

May 15 — "And then I planted corn"

May 15th, P. M.
I planted first some early beans
And then I planted corn.
I planted me some spinach greens,
All early in the morn.
And next I planted melon seed
(My back ached like a boil),
I stuck in then all I had left —
(And used Old Thomas' Oil).

June 1st, P. M.
My beans and peas and corn are up,
(My friends have all been told).
My brimming cup of happiness
It takes both hands to hold.

June 6 — "How cute he is, and queer"

June 6th, A. M.
I to my garden come this morn
And what do I see here?
A little, stripéd, yellow bug —
How cute he is and queer.
Whene'er he sees me coming out,
In the ground he hides away;
Or else he flies all round about —
Who taught him thus to play?

June 8th, A. M.
My peas are green, my beets are fine —
Where are my melons gone?
My squashes too, they are not here.
Where ARE my melons gone?

June 8th, P. M.
My neighbor says the robber bold
Was the little stripéd bug;
That he, with all his pretty ways,
"IS BETTER DEAD!"

June 12th, A. M.
We had a little shower last night,
"'Twill give my plants a show,"
Said I, as lazily I dreamed —
Alas, I didn't know.
For when the garden soon I saw,
The weeds obscured it quite,
They'd grown six inches while I slept,
SIX INCHES in one night.

June 15th, P. M.
More weeds, more bugs, oh what's the use.
The cut worm, squash bug (phew),
The cabbage miller, caterpillar —
Who wants a garden?—WHO?

July 1st, A. M.
A garden is the thing my friends,
'Tis a rose without a thorn.
A peck of luscious, sweet green peas,
From mine I picked this morn.

August 31st
This is the last. My garden's done.

June 15 — "More weeds, more bugs, Oh, what's the use"

I'll never have one more.
My turnips, carrots, Indian corn,
(Ah me, my heart is sore).
My peppers, squashes, pumpkins fat,
My parsnips,— e'en my plow —
Are eaten all, but not by me —
'Twas my neighbor's WRETCHED COW.

September 1st
The cow is dead.

NEW YORK. C. L. A

August 31 — "This is the last. My garden's done"

The Garden Doctor

Continued from page 348, July number

Chapter XIII (*Continued*)

BUT Aunt Cassandra, as I said, was worried. She thought we lived on the unsatisfactory and insufficient diet to which the babes in the woods were reduced. As a matter of fact, our commissariat department went on charmingly. We kept one eye on nutrition, the other on possible dishes. We breakfasted on fruit and prepared cereal, and boiled the eggs in a chafing dish on the table and ate them from the shells. After breakfast, the milk and butter went down cellar while the dishes were shamelessly piled in a pan and covered with water. Clarky would wash the silver — I couldn't corrupt her utterly — but the hot water in the chafing dish sufficed for the few knives and spoons, and, as she said, "the operation was simple, almost painless."

After breakfast we addressed ourselves to the out-of-doors. We had a variety of enterprises on hand. Clarky was jacking up the woodshed by a cleverly arranged system of levers, ending in a long piece of scantling whereon she would have me sit while she thrust a block in precisely the right spot. This was highly interesting, and under her treatment, the woodshed, which had threatened to divorce itself completely from the house, bid fair to return to an amicable separation, perhaps in time to complete union.

Clarky also was making a lattice for the roses to climb upon when they were ready to do so; and she had some cans of ready-mixed paint which were the joy of her heart and an unfailing solace on a wet day. She painted the pink-and-drab woodwork that distressed our eyes and made it a dull green; she "sized" the kitchen walls with some stuff that smelt abominably in the process, and then painted them. She said it was extraordinary that people could deliver over these joys to a housepainter and be content to forfeit the feeling of proud achievement.

For myself, I worked quite steadily at the thinning and transplanting. Thinning is a heart rending occupation; you can't help feeling sorry for the little plants to which you refuse a chance of life. Clarky said it was garden eugenics and scolded me for sentimentality, but I so hated throwing away the sorts that won't transplant that I used to try transplanting them, and I found I could move even poppies if I went about it properly, taking them when the ground was rather damp and, instead of digging up individual plants, taking a chunk of earth and all that grew thereon. I moved morning glories from one place where they swarmed and put them where they could climb against the house. I moved cornflowers and marigolds into the bed that the cutworms had devastated, dug up plants of sweet alyssum and made an edge of them. Then I watered, thoroughly soaking until they must have been wet to the tips of the roots, and sheltered them with an elaborate arrangement of shutters taken off the house.

I worked quite creditably every morning and the little chipmunk used to sit on the wall and watch as if he hadn't an earthly thing to do. The fox sparrows didn't watch nor the thrushes; they were too busy. The fox sparrows were building in the big lilac bush, but they would only pause for a second, to see if I were a safe person, or to snatch a bit of packing-moss for their nest. A pair of adorable bluebirds had taken a hole in my apple tree for their residence. "My apple tree," did I say? "It's *our* apple tree," they told me plainly every time I went near it. And the woodpecker, who inspected it every morning as carefully as if he were an assiduous landlord, assured both the tenants and myself that it was his apple tree. I think he not only drilled for the housebreaking worms and borers but listened, as if he could hear them moving under the bark. What ears!

It was a busy, energetic, purposeful life upon which I had "intruded," in Stephen McLeod's word. Before I was well awake in the mornings I could hear the bees humming in the apple blossoms and back and forth they went all day, tirelessly. There was fighting, love-making, quarrelling, but no *ennui*; apparently there was no time for gossip nor for watching one another's affairs. Each was keenly intent on his own business. Truly, I would have felt ashamed had I not been at work. Never did an East Side parent labor harder to feed the little mouths than did the swallows later in the summer; back and forth from the barn flew the fathers and mothers incessantly, and always the open mouths awaiting them, none shut but for an instant. I thought it would have discouraged the parents; but it didn't, for the next summer there would be another brood.

There's nothing whatever in the idea the poets give one sometimes, of birds sauntering about the sky, floating on idle pinions. They are quite as industrious as Dr. Watt's bees, only they make no noise about their work and are the gladdest things in existence.

Chapter XIV

In spite of the admirable example set by our tenants, we weren't always so industrious. Sometimes we would put our dinner (in a more or less embryonic state) into the little cart and go for the day into the pasture across the ravine. We would take potatoes to roast, bacon to broil over the coals, hoe cake to bake in the ashes.

It was a wonderful pasture, that of mine. Although they seemed so very deep — those woods where the thrushes lived — it was but a narrow strip of forest reaching down from the pines on the hill to shelter the little brook and see it safely to the river. Across the ravine and beyond them, lay the pasture. On my side, the landscape was beautiful, but quiet and gentle and wonderfully friendly; a place of softly modulated slopes, of lovely lines melting one into another, a tender and intimate beauty. Here in the pasture, everything was different. It was rough and strong and massive; great rocks pushed their huge shoulders through the thin pasture sod like uneasy giants, restless in their sleep, impatient of a covering grown cumbersome; the great bulk of the hill rose bare and uncompromising, its magnificent lines unsoftened by foliage, as if the very bone and sinew of the old earth were exposed. Of the forest with which it had once been clad, only three or four giant pines were left like vanquished Titans that by a miracle had escaped the destruction that had overtaken their fellows! These stood, huddled together, powerless for all their vast strength, raising huge, shattered branches to the sky. And, like a lovely picture, framed by the giant pines on one side and the great oaks and beeches of the ravine on the other, very far below, lay the river and the quiet meadows, curiously peaceful.

We went so often that we knew it all intimately. We knew each individual Jack-in-the-pulpit that we passed in going down the steep little path to the brook; we

watched them, week by week, grow in size and importance as their audience increased; we knew the Solomon's seal that leaned its slender stem over the brook that its tiny bells might look at themselves in the water; the wild ginger that lived close to the water, stooping its red-brown cup as if to drink from the rushing little brook; we stepped carefully aside for a tiny white wood-violet — a darling little sprite of a plant that grew directly in our path, settled comfortably in the crook of a tree-root, set on a cushion of bright green moss with a baby hemlock no taller than itself for company.

And the color! Here might the cunningest *couturier* come for hints. How was it that the fungus on the fallen brown oaks took such marvelous tones of orange, and that on the beeches varied through every shade of gray to rose and crimson? Past the brook, the woods were level and open, a fairy-book forest with wide aisles into which the sun came faintly. There were great beeches and oaks, and one cleft and hollow beech where Ariel might have been pent — and been fairly comfortable. Under foot the carpet of brown dead leaves was gay with checkerberries and ground pine and in it grew lovely wild things — fringed polygala and foam flower, fragile star flowers, each borne on the slenderest of thread-like stems above the circlet of pointed leaves.

Evidently Madame Nature has the poorest opinion of her human children! Let them establish themselves, and she hastens to withdraw her darlings to safety, hurries away the most delicate of her dainty wild things, and throws back plantain and burdocks and witch grass, as destructive children are given playthings that they can't hurt; and at the same time, she scatters her loveliness over bleak and unvisited pastures for the cows to tread on and the woodchucks to browse over, supremely careless as to whether it's seen or no by human folk.

In the pasture she was royally spendthrift. She clad her old sleeping giant of a hill, with a mantle wonderfully embroidered in changing colors. Green was the groundwork — the thin, light green of the pasture sod, the bordering trees for fringes. Then began the decoration; first, the faint showing of anemones at the edges; then, throughout the green showed the purple and gold of cinquefoil and blue violet; then bluets, misting over the green with their exquisite color, the faint young blue of the April sky. When the bluets grew fewer and fainter, she starred it over with wild strawberry blossoms, like tiny white wild roses, and swaying above them, as lightly poised as a dragonfly over a pool, the columbine. Then she changed the scheme for daisies in white and gold and, under-foot, deep blue heal all and the tiny bright red strawberries; so on through the summer and autumn, change after change, with never a pause and never a break, shifting imperceptibly from the dull rose of spirea to the gorgeous yellow of golden rod, as a skilled musician changes the key and keeps the harmony.

I never tired of watching things in the pasture, of poking into the mounds of moss for the fairy cups and the elf-needles. Clarky used to bring a book with her, but I'd as soon thought of bringing a book to the opera. Usually we camped near the woods, at the edge of the pasture where were marvelous mounds of moss — not the close green velvet that creeps over the rocks, making gorgeous skull caps for the old graybeards. This was deep and soft, and in structure like a miraculously tiny forest in which the checkerberries glowed like huge crimson lanterns; here were all the flowers of the pasture in very rare editions, violets tall and slender and wonderful in color; and bluets, not close-set as in the open, but delicate and solitary, like the starflowers, and beside them tiny hemlocks and beech-trees not any taller than a violet, and hovering above, the columbines. I could have watched it contentedly the whole day. Clarky, when she tired of reading, used to cut a thin sapling of black birch and make, with her jack knife, odd little bread-and-butter knives for our use.

Then, when the sun grew low, we would go home again to the childish supper at the doorstep with the thrushes and the friendly chipmunks for company.

Chapter XV

At the end of June, Aunt Cassandra's anxiety took a more tangible form.

"Our friend Richard," she wrote, "spends the Sabbath at Tavistock, which is I believe, but a short distance beyond you. He has kindly offered to tarry a day at Enderby and ascertain something of your way of life and the character of your occupations, which seem to me extraordinary and unsuitable."

"What a nuisance!" said I, irreverently.

Clarky looked up from her letters — she had brought the mail up from the foot of the hill and sat beside me on the doorstep reading a letter of her own, the mail bag at her feet. "Why?" she asked, "What's wrong?"

I read aloud from Aunt Cassandra —

"Well," she repeated "What's wrong? What's he like? The pansies are a good sort and good plants, the books are intelligent, neither drivel nor those near-fact things, pretty to look at and no earthly use if you want to plant. I've seen so many fool things sent to invalids I should think him rather intelligent. Isn't he? What is he like?"

"Thin, rather tall, smooth-shaven," I said meditatively, "he wears spectacles — the large, round lenses that they make in Boston."

"That's nothing against him," said Clarky quickly.

"Dark hair," I continued, "and one lock always falls forward and hits the edge of his spectacles — it makes you nervous. He has a greenhouse and likes to potter in it — and a garden. But he's a young clergyman, Clarky, and he used to send me his sermons!"

"Weren't they good sermons?" she demanded.

"Oh yes, well thought out — slightly socialistic — but I didn't want problems. And poetry, Clarky! He would send that too!"

"Good?" she inquired.

"Wearying. The form was after Rossetti; sometimes there would be a roughness and an apparent force that was Browningesque; you'd think something was coming surely; but the utterance, when it came, was — Tupper! It worried one's mind. Always I would think I was going to get something; always I wouldn't."

"But the poetry has stopped?" asked Clarky as if making a diagnosis.

I nodded.

"Sermons and a greenhouse and spectacles and socialism — " she meditated.

"Oh, and a violin. He really plays well — very well."

" — And a violin," she amended, thoughtfully. There was a moment's silence.

"The Reverend Richard will like it up here," she said at last. "He'll want to stay."

Although the day was Wednesday, and it would be two days, Friday, at least, before Richard Protheroe descended on us, or, to speak more literally, ascended to us — Clarky went indoors presently and began to prink the house. The same instinct, I suppose, that makes a woman pat her hair and look in the glass when a visitor is announced. She dusted, not that that was an extraordinary occurrence, but rarely necessary — there was more dust in one morning in town than in three weeks on our hill. She cut long sprays of the cinnamon roses and put them in the stone crock on the window-sill. Then she began to polish the andirons.

This wasn't altogether vanity on behalf of the house, for if Richard was to report us to Aunt Cassandra, naturally we wanted him to carry back grapes of Eschol, as it were, rather than any report of giants in the land.

While Clarky was doing this, I sat on the doorstep and looked at the flower-beds than ran alongside the house. Then I, too, rose up and followed her example; I began to prink the garden. I got the hose and washed the faces of the pansies and the maiden-hair in Clarky's garden-bed, and a lovely little bit of herb Robert that was coming into bloom from a chink in the wall, until they looked as fresh and cheerful as a baby after a bath. Then I went around the corner to see the larger garden. Richard was something of an expert in a shy, quiet way, and I felt a little like a Sunday School superintendent surveying his school, just before the children are to give a program. There were all the bright little faces in nicely kept rows. To me, the garden looked very creditable.

(To be continued)

The hill system, individual plants. The most intensive method

The single hedge row, a moderately intensive system. Less costly than the hill

The matted row system, the easiest with great production but not large berries

Making a Strawberry Bed — By A. E. Wilkinson, New York

SET OUT A NEW STRAWBERRY PATCH THIS SUMMER AND RELIEVE THE GREAT SPRING PRESSURE WHEN THERE WILL BE PLENTY OF OTHER THINGS TO DO — WHERE SUMMER AND FALL PLANTING IS PROFITABLE

IF YOU are in the proper belt, by all means plant the new strawberry bed this summer. The exact time that is most suitable depends on the rainfall more than on any other factor. If the seasonal rains occur in July and August, that is the time to plant; if the rainfall is later, defer planting accordingly. Other things being equal, the earlier date of planting the longer period the plants will have in which to grow, exactly as it is in spring planting. In some localities that should be done in April or May, using the plants that are made this year, while in other locations, the rainfall being in June, planting is best done then, with the crop of runners of the same season. So, it all depends!

In the Middle Atlantic States the work is divided between spring and August, the balance in favor of August planting generally. In New England, spring is the best as also in the northern half of the prairie region west of the Mississippi.

There are four systems of planting. The most common system is the matted row method because less labor is required in setting and caring for the plants and the crop of fruit is larger.

After the plants are set in rows, which are three to three and a half feet apart, with the plants from eighteen to thirty inches apart in the row, the runners are allowed to have full swing. In cultivating, the machine is only run in one direction and, as the plants spread, the cultivated space narrows until twelve or fifteen inches at its greatest width.

The greatest drawback to this system is a crowding of plants, resulting in a somewhat smaller crop and quite small fruit. Proper thinning of the plants in too heavily set matted rows will obviate this.

Single-hedge row. This method is quite well adapted to a more intensive system of strawberry growing. The main idea is to set out the plants in rows two to three feet apart, the plants being twenty to thirty inches apart in the row. Each plant is allowed to produce two runners, and one plant is produced on each runner. Other runners are clipped off as they appear.

These two new plants are trained to grow in the row of older plants, each plant being one foot distant from its neighbor in the row, and allowing no runners to grow.

Double-hedge rows. A development of the single-hedge row idea, in which the mother plant is allowed to set either four or six plants instead of but two. These plants are trained to form three rows, one being in line with the older plants and a row each side of the mother plant row, each plant having a certain allotted space, which permits ease in hoeing and cultivation, also eliminates crowding.

An ideal potted plant which is best for August planting, if the plants have to make a journey

The plants are set thirty inches apart in the row, the rows three feet apart, allowing, when the plants are grown, about one half the space for the plants and one half for clean culture.

The hill. This is the most intensive system of strawberry growing, in which the plants are set from one foot apart each way to one foot apart in rows eighteen inches to thirty inches apart; the plan being not to allow any runners or new plants to set, but permitting the plants to grow to great size.

This system, being so very "intensive," requires heavy manuring and fertilizing, as well as constant cultivation and attention to runner cutting. After the plants are properly set it is often necessay to water them, particularly if the soil is quite dry when the plants are set.

This first watering is often helped by the proper removal of the leaves when the plants are set.

From twenty-five to 100 plants well cared for will answer for the majority of families who have but small space.

As soon as the plants arrive unpack the box without delay, and, if you do not immediately plant, dig a shallow trench and place the plants in this. Be sure that the bundles are untied; be sure that the soil is moist and packed firmly around the roots. If there is any trouble with the plants, such as mould, or the plants are of poor quality, notify the dealer at once.

Notice the roots of plants. If they are black or dark colored, better not take the plants, as they are old. The best plants have light yellow, sometimes light orange colored roots, which denote that the plant is young. If there is a good, well-developed root system, so much the better.

THE LITTLE FARM

Ten Acres Enough* — Chap. IX.

(*Continued from page 350 July*, 1913)

AT THE opening of the third spring, the garden received our first attention. It was covered heavily with manure and cleared up. This year we had no seeds to purchase, having carefully laid them aside from the last. In order to try for myself the value of liquid manuring, I mounted a barrel on a wheelbarrow, so that it could be turned in any direction, and the liquor be discharged through a sprinkler. As early as January the asparagus was sprinkled; indeed, it was deluged with twenty barrels of liquor before it was forked up. It had also received its full share of rich manure in the autumn. The shoots came up more numerously than before, were whiter, thicker, and tenderer, and commanded five cents a bunch more than any other. As the bed was a large one, and the yield great, we sold to the amount of $21.

The same stimulant was freely administered all over the garden. It was never used in dry weather, nor when a hot sun was shining. We contrived to get it on at the beginning of a rain, or during drizzly weather, so that it should be immediately diluted and then carried down to the roots.

Worth of Liquid Fertilizer

IT brought the early beets into market ten days ahead of all competitors, thus securing the best prices. It was the same with radishes and salad. The latter came early into market in the best possible condition; and as there happened to be plenty of it, we sold to the amount of $19 of the very early; and then, as prices lowered, continued to send it to the store as long as it commanded two cents a head, after which the cow and pigs became exclusive customers. The fall vegetables, such as white onions, carrots and parsnips, having had more of the liquor, grew to very large size. It was the same thing with currants and gooseberries. The whole together produced $83; to which must be added the ten peach trees, all of which I had thinned out when the fruit was the size of hickory nuts. This was in 1857, that time of panic, suspension, and insolvency. That year had been noted, even from its opening, as one of great scarcity of money in the cities; but we in the country, being out of the ring, gave way to no panic, felt no scarcity, experienced no insolvency. The fruit from the ten acres produced me $69, making the whole product of the garden $152.

As usual, the strawberries came first into market and were prepared and sent off with even more care than formerly. My net receipts were $903. An experienced grower near me, with only four acres, cleared $1,200 the same season. His crop was much heavier than mine.

A portion of the raspberries had been thoroughly watered with the liquid manure, all through the colder spring months. It was too great a labor, with a single wheelbarrow, to supply the whole two acres, or it would have been similarly treated. But the portion thus supplied was certainly three times as productive as the portion not supplied. My whole net receipts from raspberries amounted to $267. The plants were now well rooted, and were in prime bearing condition.

For applying the liquid manure, I mounted a large hogshead on low wheels, the rims of which were four inches wide so as to prevent them sinking into the ground, the whole thing constructed to weigh as little as possible. The sprinkling apparatus will drench one or two rows at a time, as may be desired. The driver rides on the cart, and by raising or lowering a valve, lets on or shuts off the flow of liquor at his pleasure. It stimulates an astonishing growth of canes, increases the quantity of fruit, and secures a prodigious enlargement in the size of the berries.

The Lawtons were this year to come into stronger bearing. People in New York and Philadelphia had agreed to take all my crop, and guarantee me twenty-five cents a quart. One speculator came to my house and offered $200 for the crop, before the berries were ripe. I did not accept the offer and made out a trifle better, as the quantity marketed amounted to 896 quarts which netted me $206.08. In addition to this, the sales of plants amounted to $101. As the season for the blackberries closed, all the stray fruit was gathered and converted into an admirable wine. Some seventy bottles were made for home use; for which, when a year old, I found ready sale at fifty cents per bottle. Since then we have made a barrel of wine annually; and when old enough, all not needed for domestic purposes is sold at $2 per gallon.

We raised nothing of value among the blackberries this year. The growth of new wood had been so luxuriant that the ground between the rows was too much shaded to permit other plants to mature. In some places, the huge canes, throwing out branches six to seven feet long, had interlocked with each other from row to row, and were cut away, to enable the cultivator and weeder to pass along between them, and thenceforward the acre was given up entirely to the blackberries. As the roots wandered away for twenty or thirty feet in search of nourishment, they acquired new power to force up stronger and more numerous canes. When not standing too close together, they were carefully preserved, when of vigorous growth; but the feeble ones were taken up and sold. Thus, in a few years, a row which had been originally set with plants eight feet apart became a compact hedge, and an acre supporting full six times as many bearing canes as when first planted. It will continue to increase annually if not more than three vigorous canes are allowed to grow in one cluster; if the canes are cut down in July to three or four feet high; if the branches are cut back to a foot in length; if the growth of all suckers between the rows is thoroughly stopped by treating them the same as weeds; if the old-bearing wood is nicely taken out at the close of every season; and, finally, if the plants are bountifully supplied with manure.

The peaches, now in their first bearing year, succeeded the Lawtons. We had protected them from the fly for three seasons by keeping the butts well tarred. Some few of them produced no fruit whatever, but the majority made a respectable show. I myself examined each tree with the utmost care, and removed every peach of inferior size, as well as thinning out even good ones which happened to be too much crowded together. My 804 trees produced me $208 clear of expenses, with a pretty sure prospect of doing much better hereafter.

My acre of tomatoes netted me this year $192, my pork $61, my potatoes $40, and the calf $3. Thus, as my grounds became charged with manure — as I restored to it the waste occasioned by the crops that were removed from it — so my crops increased in value. It was thus demonstrable that manuring would pay. On the clover-field the most signal evidence of this was apparent. After each cutting of clover had been taken to the barnyard, the liquor-cart distributed over the newly mown sod a copious supply of liquid manure. I have mowed it three times in a season, and can readily believe that in the moister climate of England and Flanders as many as six crops are annually taken from grass lands treated with liquid manure.

First Crop of Peaches — Balance Sheet for Three Years

THREE years' experience of profit and loss is quite sufficient for our present purpose. It has satisfied me, as it should satisfy others, that ten acres are enough. I give the following recapitulation for convenience or reference:

Expenses for three years	1855	1856	1857
Manures of various kinds	$268	$ 346.00	$ 358.06
Wages and labor	102	238.00	244.00
Feed for stock	28	79.30	103.00
Stakes and twine for Lawtons	..	7.00	8.00
Garden and other seeds	8	13.00	.....
Cabbage and tomato plants	30	.....	.....
Lumber, nails, and sundries	..	14.50	81.00
Loss on cow	7	.....	.....
Cost of pigs	12	12.00	12.00
	$455	$ 709.80	$ 806.06
Receipts for three years	**1855**	**1856**	**1857**
Strawberries, 6 acres		$ 857.60	$ 903.00
Lawton plants sold	$160	213.50	101.00
Tomatoes, 1 acre	120	190.00	192.00
Garden, including ten peach trees	80	121.00	152.00
Cabbages	82	70.20	.....
Raspberries, 2 acres	...	38.72	267.00
Lawtons, 1 acre	..	159.84	206.08
Pork	49	58.00	61 00
Potatoes	..	24.00	40 00
Calf	..	2.00	3 00
Peaches, 804 trees, first bearing year	..	....	208.00
	$791	$1,734.86	$2,133.08
Expenses as above stated	455	709.80	806.06
Annual profit	$336	$1,025.06	$1,327.02

Deducting the income from the sale of plants, the pigs, and the calf, as exceptional things, the profit of the nine acres for the first year will be found to be nothing per acre, for the second year, $83.50, and for the third, $129.10. The ground was crowded to its utmost capacity with those plants only which yielded the very highest rate of profit, and for which there was an unfailing demand. It was cultivated with the most unflagging industry and care. Besides using the contents of more than one barnyard upon it, I literally manured it with brains. My whole mind and energies were devoted to improving and attending to it. Others all around me diffused their labor over twenty acres; I concentrated mine on ten. Yet, having only half as much ground to work over, I realized as large a profit as the average of them all.

For six years since 1857 I have continued to cultivate this little farm. Sometimes an unpropitious season has cut down my profits to a low figure, but I have never lost money on the year's business. Now and then a crop or two has utterly failed, as some seasons are too dry, and others are too wet. But among the variety cultivated some are sure to succeed. Only once or twice have I failed to invest a few hundred dollars at the year's end. I have spent considerable money in adding to the convenience of my dwelling, and the extent of my outbuildings; among the latter is a little shop furnished with more tools than are generally to be found upon a farm, which save me many dollars in a year, and many errands to the carpenter and wheelwright. I buy nothing on credit, and for more than ten years have had no occasion to give a note.

As previously stated, there is no successful farming without a liberal expenditure for manure. I had proved that high manuring would pay, and while anxious to increase the quantity, was desirous of reducing the money cost. I continued every season to scour the neighborhood for leaves, and to gather up all available material from the barnyard. But in addition to all this, in October and November of my fourth year, I purchased twenty heifers which would calve in the spring, intending to feed them through the winter, and then sell as soon as they had calved. My idea was that they could be sold for a profit large enough to cover the cost of keeping them, thus leaving the manure all clear. I consulted many persons versed in this business, farmers, butchers, and others, before venturing on it, as it was a good deal out of my usual line of operations. I also consulted all my files of agricultural papers, where I found set forth a multitude of experiences on the subject, the most of which led me to conclude that it would be safe to try the experiment.

I accordingly had a rough shed built, large enough to contain twenty cows, with an entry in front of them and a large feed-room at one end. Then mangers were provided, and a plank gutter laid just back of where the cows would stand, into which all the droppings would fall, and down which the water would run into a wide earthen pipe which emptied into the cistern in the barnyard. Here the cows stood in a row, never being allowed to go out, except an hour or two at noon when the weather was fine. I agreed with my assistant to take entire charge of the feeding and watering for the consideration of $30 extra. I bought the cornstalks from some twenty acres near me, at $3 an acre, and these were delivered from time to time as they were needed, there not being room on the premises for so large a quantity at once. I had provided a superior cutter, with which Dick cut up the stalks and blades, reducing them to pieces a half-inch long, and he then put them into a hogshead of water, where they remained a day and night to soak. Thence they were transferred to a steaming apparatus, constructed expressly for this purpose, where they were made perfectly soft. Corn meal, bran, and various kinds of ground feed were mixed in and steamed with the cut stalks, a sprinkling of salt being added. A day's feed for the whole twenty was cooked at one operation. This preparation came out soft and palatable, and the cows took to it greedily. The ground feed was varied during the season, and occasionally a few turnips, parsnips, and cabbages were cooked up to increase the variety. I had no hay to give them.

But on the other hand, Dick gave them four good strong messes every day, that at night being a very heavy one. He said they throve as well as any cattle he had ever seen. The gutter behind them was cleaned out twice a day and sprinkled with plaster, thus keeping the place always clean and sweet. The manure was thrown directly from the gutter into a wheelbarrow having a thick layer of leaves spread over its bottom, and then emptied in a heap under the manure shed. As the cows were also littered with leaves, these, when too foul for longer use, were taken to the same heap. Others were added, with cornstalks in occasional layers; and as each layer was deposited, the whole heap was saturated with liquor from the cistern. I do not think a better lot of common barnyard manure has ever been manufactured.

Live Stock On the Farm

As soon as the cows began dropping their calves in the spring, I advertised them, and plenty of purchasers appeared. They had cost me $22 each. I had kept them an average of one hundred and forty days for each cow, at a cost of six cents per day for each, or $8.40, making with the first cost $30.40 per cow, or $608 for the whole. To this was added $60 for cornstalks and $40 for Dick, making a grand total of $708. I sold them at an average of $35.50, and thus realized $710, or a cash profit of $2. Instead of paying Dick $30 for his trouble, I told the fellow that, as he had performed his duty so satisfactorily, he should have $40.

Thus I made $2 in cash by the operation, besides having a great quantity of cornstalks left over, and a pile of manure certainly as ample as any for which I had paid $250. Moreover, it was on my own premises; it had been most carefully attended to during the whole process of manufacture; I knew what it was composed of, and that the seeds of noxious weeds could not have been added to it. Here was a clear saving of $250 added to my profits.

The result was so encouraging, that I have continued the practice of thus feeding cattle during the winter from that day to this, increasing the number, however, to twenty-five. I find no difficulty in making sales in the spring. Sometimes I have lost a few dollars on a winter's operations, sometimes made a little profit, and sometimes come out just even. On the run of four years there has been no profit beyond the manure; but that much is all clear.

There is a very cheap and convenient mode of covering manure from the weather, which I have constantly practised, thus avoiding the cost of building sheds. I took inch boards sixteen feet long, and sawed them in half, making two lengths each eight feet. The boards were as wide as could be had, say twenty inches. Battens were then nailed across each end and the centre, to prevent warping. Then to each end a board of equal width, and five feet long, was secured by strap hinges. The manure heap was then built up, say five feet high, and eight wide at the top. When thus finished, one of the boards was placed across the top; the ends being hinged, fell down over the sides of the heap, and touched the ground. Beginning at one end of the heap, the hinged boards were laid on until they reached to the other end. The ends were covered with loose boards. Whenever rain was coming on, and it was thought the heap needed water to prevent fire-fanging, this portable shed was lifted off in five minutes. After receiving a good soaking, the shed was in five more minutes replaced on the heap; and when no composting was going on, the boards were simply stowed away in some by-place until again wanted. To those who believe in the value of housing manure but who cannot afford to erect buildings for the purpose, these portable sheds will be found, for $10, to be as effectual as a building costing $60, while at the same time they do not occupy any useful ground.

I will not say that ten acres in New Jersey can be made to produce more money than ten acres located elsewhere, but it is nevertheless remarkable that the census tables show that the produce of New Jersey per acre, when the whole area of the State is taken into account, is considerably greater than in any of the adjoining States. The product per acre, in some of the fruit-growing counties nearest the two great cities, is even more remarkable. The average cash value of the products of all our market gardens is $20 annually, while that of the gardens in New York and Pennsylvania is only $5 each. Of our orchards it is $25, while in New York it is only $10, and in Pennsylvania only $5. The value of agricultural implements and machinery is relatively far greater than in either of these empire states. Nothing short of a superior productiveness for truck and fruit, in the soil of New Jersey, can account for such results.

Some Acre Figures

I KNOW a small farmer who has realized $600 annually from six acres of rhubarb. Another has twenty acres of asparagus, from which he realizes $600 per week during the season for cutting. Besides, it grows an acre of common gooseberries, from which his annual profit is $200. I have known another to sell $500 worth of tomatoes from a single acre, besides having many bushels for the hog-pen. Asparagus, strawberries, raspberries, blackberries, currants, grapes, and gooseberries yield enormous returns when properly attended to, far surpassing anything ever obtained from the heavier stable crops, such as grain, grass and stock.

The greater profit per acre is almost invariably made by those who have very small farms. The less they have the more thoroughly it is cultivated: while the few who have sufficient faith in manure, and who thus convert their entire holding into a garden, realize twice or thrice as much per annum as they had paid for the land. I knew a striking illustration of the value of this faith in manure. It is in the person of a Jerseyman who began, twenty-five years ago, upon a single acre of rented land, with a capital of only $50. This man regarded the earth as of no practical use except to receive and hold manure; and his idea was, that if he crowded it full enough, every rain would extract from it, and convey directly to the roots of the plants, the liquid nutriment which gives to all vegetation such amazing vigor. Thus, the solids, if in sufficient supply, would be sure to furnish the liquids, on which he knew he could rely. Though full of original and practical ideas, this was his absorbing one. He soon obtained possession of a small farm, with ample time allowed for payment; for his industry and skill established a character, and character served for capital.

His cash outlay for these fertilizers was of course, enormous, and has amounted to thousands of dollars per annum. It has been constantly increasing, and grows even as I write. But his faith in manure was accompanied by works. His fields rewarded him in proportion as he enriched them. As he went early and largely into the growing of rhubarb, when all others were too timid even to touch it, so for years he was the only man who sent tons of it to market during a long period in which it paid extravagant profits. By skilfully regulating his crops, he secured an uninterrupted succession during the entire season; so that from the earliest to the latest period of the year he was constantly receiving large cash returns.

As may be supposed, such a man could not fail to become rich. From his humble beginning of a single acre he has gone on adding farm to farm, house to house, and lot to lot, and is ever on hand to purchase more. His passion is to own land. But even so thorough a farmer as he may in the end acquire too much to be profitable.

(To be concluded)

The fertilizer for even a small place is usually quite a large item; but it pays!

Success With Daffodils

AUGUST is the month when we transplant our daffodil bulbs. This is after a rest of about two months. Here in California the tops die down the last of May and the bulbs are then taken up and stored in a cool, dry place until August. This system of replanting every season makes larger and more beautiful blossoms.

I must confess, however, that I don't replant all of my beds. Some of them have not been disturbed since they were made five years ago. The blossoms in those beds are not so large, but are borne on longer stems.

My daffodils have had plenty of fertilizer (barnyard manure) but have not been irrigated. I believe that too much water is the cause of poor daffodil beds here on the Coast. Most people plant the bulbs on the edge of the lawn where they are watered when the lawn is irrigated. This causes them to grow the entire year and the bulb does not have the rest it needs. The tops should die back in summer and the withholding of water allows this.

The only cultural care needed is the removal of weeds. In the beds that have not been replanted yearly, the weeds have been nearly all killed out by the thick growth of flowers.

In our climate the blossoms appear very early. This year the first were picked in January. Usually they come the first of February, however. Having so many, we dispose of a part of the blossoms in a near-by city which gives us a small income. The blooming season here is about six weeks, and the supply of blossoms is increased by constant picking. We often plant, with the daffodil bulbs, an equal number of jonquils; they bloom about the time the last of the daffodils appear and thus prolong the charming beauty of an early yellow bed. The jonquils have a delightful fragrance.

Following the yellow flowers come the narcissus. We have several varieties, all of which are planted in August or September. They receive the same treatment as the daffodils. The latest of these bulbs to bloom is *N. alba odorata* which is really a double *Narcissus poeticus*.

Our bulb garden was started with a handful of bulbs brought from Illinois and from this handful has grown, in five years, a collection of 15,000 or 20,000.

Santa Rosa, Cal. MRS. H. A. CRAIGEN.

Suggestions for August Planting

IN SPITE of the fact that out-of-door flowers are so plentiful most of the year, the bright colored blossoms that appear first thing in the spring bulb garden give as much pleasure in California as in New York.

It is too early to plant all the bulbs for spring flowering but the following may be started the last of this month: Cyclamen, freesia, a variety of colors of hyacinths (some of these should be planted in pots in the house or grown in the regular hyacinth vase.

Callas, both the white and yellow, should be a part of the bulb collection. In our sunny climate these bulbs blossom profusely out-of-doors and are splendid for massing against the wall or along a fence.

Don't fill all your space with the bulbs now; you will want some others to be planted with them in September and October. Plan for amaryllis, gladiolus, crocus, Spanish iris, and ixias to be planted in September; and agapanthus, Japanese lilies, Easter lilies, snowdrops, sparaxis and tulips in October.

If you never have had a border of California

poppies (Eschscholzia), you surely should plant plenty of the seed this month. Scatter it thickly in rows along the drive or to form a border along the road. The plants grow rapidly and bloom heavily and continuously throughout the summer and fall. The crimson variety is even better than the yellow, but either is worth planting in sunny places either in beds or as edgings.

Other flower seeds to be sown in August are: Coreopsis, delphinium or larkspur, dianthus (the different varieties of carnations and pinks), forget-me-not, feverfew, foxglove, the good old-fashioned hollyhock and phlox, calendula, and candytuft.

Plantings of vegetables in the southern part of the coast country are a little different from those in the northern parts. Accordingly, suggestions are given for both sections. You must watch your own conditions and not follow these suggestions too closely, because the climate is so different in localities even a little removed from each other.

In general it is safe to plant the following vegetables in the southern valleys and foothills on irrigated lands: Cabbage, cauliflower, corn, lettuce, potatoes, radishes, spinach, the second crop of corn salad, carrots, dandelion, kale, endive, mushroom spawn, peas, and parsley.

Those who live in the northern locations may plant, on lands that can be watered for a few weeks until the rains come, the following: Cabbage, cauliflower, lettuce, radishes, turnips, onions for sets, beans, beets, brussels sprouts, and parsnips.

California. JOHN Y. BEATY.

As the Summer Advances

ONION bulbs usually ripen during August and should be harvested promptly. Dry thoroughly in the sun and store in a dry place entirely free from any trace of salt.

Pole lima beans are usually at their best during this and next month. Keep picking constantly so that the vines will continue bearing, unless you want to save some seed for next year.

Early celery should be ready for use now, and more seed for a late crop may be sown in a rich, moist soil.

Cotton that has not stopped growing will be greatly benefited by an application of nitrate of soda, given right now.

Begin sowing turnips during the month, when another planting of early bush nasturtiums may also be made.

Pickle cucumbers, planted last month, should be thinned and cultivated. Thorough and frequent cultivation is now necessary, not only for the cucumbers, but also for squashes, watermelons and muskmelons.

Early bush beans may be planted during August.

Don't neglect the flower garden. If the soil becomes very dry give it a thorough soaking, not a surface watering, as that is worse than none.

Sow pansy seed now. One-eighth to one-fourth of an inch is deep enough; keep the soil moist and shaded from the midday sun until the plants are well up.

Madonna lilies should be planted during the month.

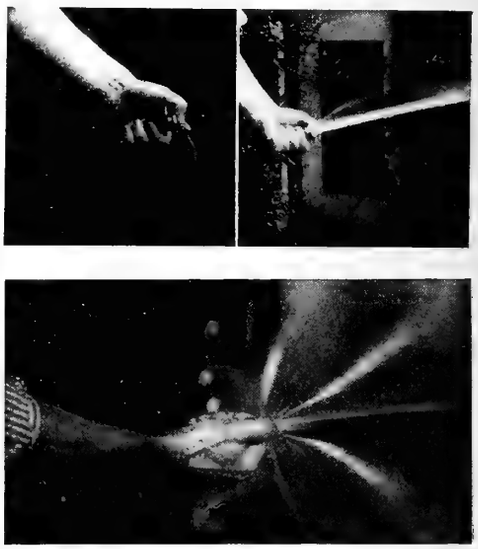
Look after the chrysanthemums. The early planted ones may need disbudding and a dose or two of liquid manure or nitrate of soda. Nitrate of potash you will find even better in its results.

Georgia. THOMAS J. STEED.

A Few Points About Using a Hose

A HOSE may be a source of benefit or an implement of destruction according to the degree of intelligence with which it is used. The majority of people have a sprinkler attached which can be adjusted to give a heavy stream or a light mist. But the conditions are usually different for almost every foot of the flower bed; large plants at the back can stand a heavier stream than the tender things in the border, and if you use the heavy stream on the shallow-rooted plants you will wash them out of the ground.

If sprinklers would automatically adjust themselves to the various conditions, they would be ideal; but as they do not, the best substitute for



A shift of the thumb when hosing the garden will give a heavy or light stream of water

the nozzle is the thumb. Did you ever see a professional gardener watering with a hose? Notice that he uses no nozzle, but as he goes over the bed the stream will vary quickly from heavy to light, effected by a slight movement of the thumb.

When your hose begins to crack, cut it open at the point of cracking and insert a brass sleeve, half in each end of the hose. Some sleeves are made so that they have to be bound with wire to hold them in place, while others, equally inexpensive, are made with prongs bending backward so that when slipped into place they hold perfectly without any binding.

A good hose should last eight years before showing any serious signs of wear and then its life can be prolonged for many years by doctoring. That is, if the hose was a good one in the beginning. Don't buy a bargain counter article, and don't bother much about the ply. Personally, I would rather have a four-ply hose made by a reputable firm than a ten-ply hose made by someone without a reputation. Too much consideration is placed

Pulling from the tap at a right angle is what wears out a hose

Greenhouse heating problems solved by the Readers' Service

on the matter of heavy ply and too little on the reputation of the manufacturer.

If you have a good hose treat it properly. After using don't hang it on a nail and don't leave it in the sun. Always leave a little slack at the nozzle; empty the water out after using, and when you hang it up in the cellar see that the support is broad enough to prevent injury. A good plan is to fasten the hose to the tap in the cellar after the summer is over and arrange the hose so that it can be conveniently uncoiled in case of fire.

Massachusetts. PERCIVAL MOORE.

Bagging Asters to Beat the Bugs

EVERY February, for ten years, I have bought aster seeds; every March I have planted them carefully in flats in a sunny window; every May, when danger of frost was over, I have set the seedlings in the garden; and every August I have helplessly watched the meanest of bugs "reap where he did not sow."

There may be favored localities where "hand-picking, morning and evening" will suffice to keep the aster beetle in check, but in my garden it seems merely to call fresh cohorts to battle. I no sooner reach the end of the row — and it is not a long one by any means — than it is time to begin again at the other. And even in a small garden, there are other things to do besides save the asters.

Last year my asters were planted in the bulb border, and had been carried safely past the cutworm period and the other trials and dangers of infancy; they were covered with buds and were the most promising plants I had had for years. Then, silently, like the proverbial wolf on the fold, came the aster beetle. He is one of the dependable things of this world, like death and taxes. At first there were only one or two of him, and I joyfully hand-picked and kerosened him on sight. Then he came in dozens and then in droves, and began in earnest to eat the heart out of the biggest, choicest buds. I was in despair. Applications of poisons seemed to be more fatal to the flowers than to the bugs. Suddenly I thought, "Why not cover the plants with netting."

I had some brown net grape bags, given me by a friend who had brought them from France. They are simple square-bottomed bags, about six or eight inches wide by twelve deep, with a draw-string around the mouth. I slipped one over each plant, selecting the ones whose buds were nearest perfection, drew it well down on the stem, enclosing as many of the buds as possible, and pulled the string tight around the stem.

One of the real "treats" of the summer was seeing the horrid black bug crawling over the protected flowers and wondering how he was going to get at the delightful meal; and when I found the beetle demolishing my gladiolus, I bagged *them*.

Of course, this only serves to protect the buds for cut flowers. There is no virtue in the color of the bag, and one could provide pink ones for pink flowers, purple for purple, or white for white, if the color scheme of the garden demanded such treatment! Or all green ones would be harmonious.

Another point of minor importance. Anything bagged always has a mystery to it that keeps the neighbors' interest at the boiling-point, and suggests all kinds of rare and costly things, so that one can have a little quiet fun at hearing comments and explanations from inquisitive neighbors.

New Jersey. A. C. BROWN.

Write to the Readers' Service for suggestions about garden furniture

Brandeis Attacks Price-cutting

[NOTE.] It takes courage of the highest order to stand firm against uneducated public opinion—for the public's good.

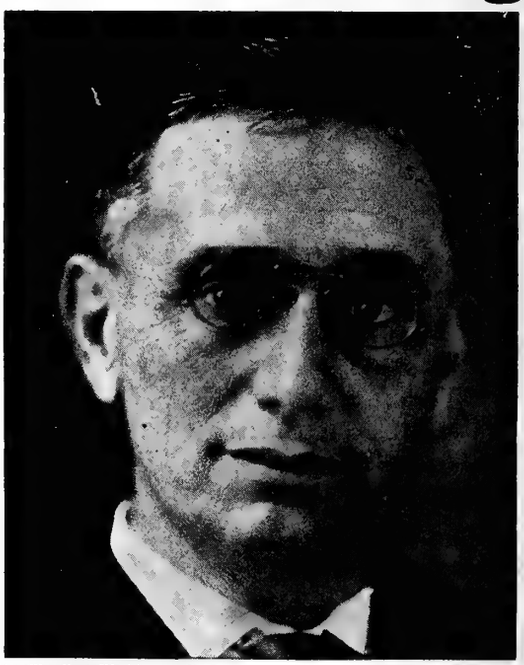
Probably in his life of service Louis D. Brandeis, the great People's Lawyer, has never taken a step that will arouse greater comment than the following article.

Most people who have not studied the subject are against price-maintenance. The consumer thinks it a device to make him pay more; the merchant feels that when he buys the goods of the manufacturer they are his and that it is an infringement of his rights to establish his selling price.

Careful study of the subject, however, shows that the same price everywhere is for the best interests of the buying public, the independent dealer, and the independent manufacturer.

Price-cutting on articles of individuality, Mr. Brandeis maintains, would enable men controlling vast combinations of capital to win local markets one by one, and create monopolies on the things we eat and wear, then raise the prices higher than before.

This article is published by a number of the leading magazines in the belief that by giving wide publicity to the views of so noted a foe to monopoly as Mr. Brandeis the real interests of the enterprising individual manufacturer, the small dealer, and the public will be served.



(c) Clinedinst, Washington, D. C.

Price-maintenance Encourages Individual Enterprise

By Louis D. Brandeis

THE American people are wisely determined to restrict the existence and operation of private monopolies. The recent efforts that have been made to limit the right of a manufacturer to maintain the price at which his article should be sold to the consumer have been inspired by a motive that is good—the desire for free competition — but they have been misdirected. If successful, they will result in the very thing that they seek to curb — monopoly. Price-maintenance — the trade policy by which an individual manufacturer of a trade-marked article insures that article reaching all consumers at the same price — instead of being part of the trust movement is one of the strongest forces of the progressive movement which favors individual enterprise.

The Article with Individuality

THERE is no justification in fixing the retail price of an article without individuality. Such articles do not carry the guarantee of value that identifies them with the reputation of the man who made them. But the independent manufacturer of an article that bears his name or trademark says in effect:

"That which I create, in which I embody my experience, to which I give my reputation, is my own property. By my own effort I have created a product valuable not only to myself but to the consumer, for I have endowed this specific article with qualities which the consumer desires and which the consumer may confidently rely upon receiving when he purchases my article in the original package. It is essential that consumers should have confidence in the fairness of my price as well as in the quality of my product. To be able to buy such an article with those qualities is quite as much of value to the purchaser as it is of value to the maker to find customers for it."

The Distinction Drawn

THERE is no improper restraint of trade when an independent manufacturer in a competitive business settles the price at which the article he makes shall be sold to the consumer. There is dangerous restraint of trade when prices are fixed on a common article of trade by a monopoly or combination of manufacturers.

The independent manufacturer may not *arbitrarily* establish the price at which his article is to be sold to the consumer. If he would succeed he must adjust it to active and potential competition and various other influences that are beyond his control. There is no danger of profits being too large as long as the field of competition is kept open; as long as the incentive to effort is preserved; and the opportunity of individual development is kept untrammeled. And in any branch of trade in which such competitive conditions exist we may safely allow a manufacturer to maintain the price at which his article may be sold to the consumer.

COMPETITION is encouraged, not suppressed, by permitting each of a dozen manufacturers of safety razors or breakfast foods to maintain the price at which his article is to be sold to the consumer.

By permitting price-maintenance each maker is enabled to pursue his business under conditions deemed by him most favorable for the widest distribution of his product at a fair price. He may open up a new sphere of merchandising which would have been impossible without price protection. The whole world can be drawn into the field. Every dealer, every small stationer, every small druggist, every small hardware man can be made a purveyor of the article, and it becomes available to the public in the shortest time and the easiest manner.

Price-cutting of the one-priced trade-marked article is frequently used as a puller-in to tempt customers who may buy other goods of unfamiliar value at high prices. It tends to eliminate the small dealer who is a necessary and convenient factor for the widest distribution; and ultimately by discrediting the sale of the article at a fair price, it ruins the market for it.

Abolish Monopoly but not Price-maintenance

OUR efforts, therefore, should be directed not to abolish price-maintenance by the individual competitive manufacturer, but to abolish monopoly, the source of real oppression in fixed prices. The resolution adopted by the National Federation of Retail Merchants at its annual convention draws clearly the distinction pointed out above. The resolution declared that the fixing of retail prices in and of itself is an aid to competition; among other reasons, because it prevents the extension of the trust and chain stores into fields not now occupied by them. But the resolution also expresses the united voice of the retailers against monopoly and against those combinations to restrain trade against which the Sherman law is specifically directed.

Manufacturers and retailers are getting this distinction clearly in their minds, and it must soon be generally recognized by the public. What is needed is clear thinking and effective educational work which will make the distinction clear to the whole people. Only in this way can there be preserved to the independent manufacturer his most potent weapon against monopoly — the privilege of making public and making permanent the price at which his product may be sold, in every State in the Union.

JAPAN BAMBOO CANES

Indispensable for staking your Lilies, Roses, Pot and herbaceous plants, Gladioli, small shrubs, etc.

Strong and durable not decaying like wooden stakes or Southern Swamp cane. (*Dyed a dark green, very ornamental*)

	50	100	250	500	1000
2 ft.	$ .35	$ .60	$1.50	$2.50	$4.50
3 ft.	.45	.75	1.75	3.25	6.00
4 ft.	.60	1.00	2.50	4.00	7.50
Natural color 6 ft.	.60	1.00	2.00	3.75	7.00

EXTRA heavy Bamboo canes

Necessary to stake Dahlias, Tomatoes, young trees, Pole beans, etc.

8 ft. long Diameter ¾ inch up — 12 $1.75, 50 $6.00, 100 $10.50

Lil. Candidum: the exquisite pure white

Madonna Lily

Should be planted *late August* and *September*.

	One	Doz.	100
Large Bulbs	$ .15	$1.50	$10.00
Mammoth Bulbs	.20	2.00	12.00
Jumbo Bulbs	.30	3.00	15.00

Price includes delivery. 3 at Dozen, 25 at 100 rates.

Send for our Fall Bulb Book—Ready August 15th.

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Bulbs that are "Essential to Success"

Thorburn's

THE time for "bulb buying" is near. Therefore, don't neglect to send your name NOW for Thorburn's Bulb Catalog, which will be issued very shortly.

You are sure to value Thorburn's Bulb Catalog, for it contains everything worth while in Bulbs — also many valuable hints and suggestions.

Send us a postal NOW.

J. M. Thorburn & Co.
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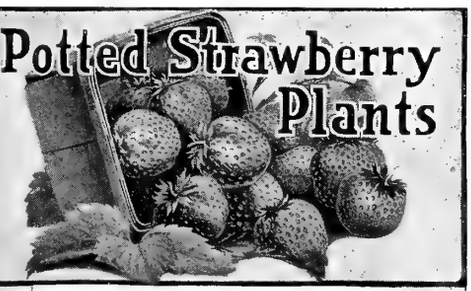
New York

Potted Strawberry Plants



The best varieties, both new and old, and the best methods of planting to raise a full crop of Strawberries next year are fully particularized in

DREER'S
Mid-Summer Catalogue

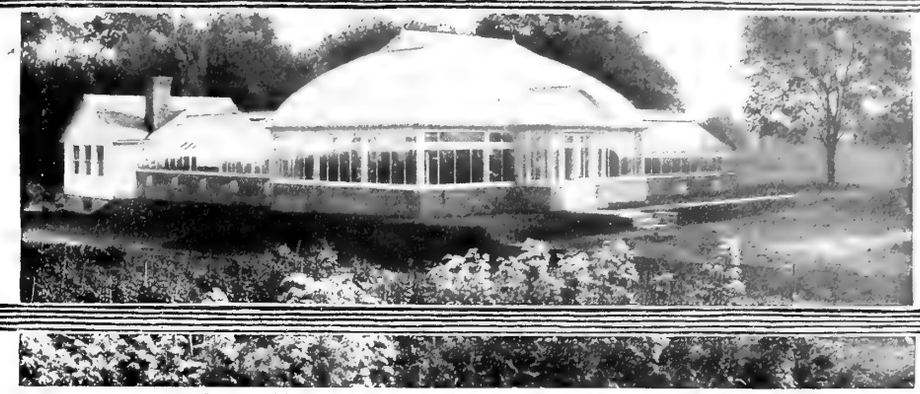
Also the best varieties of Celery, Cabbage Plants, etc.

A most complete list of the *Best Hardy Perennial Seeds* for summer sowing.

Also vegetable and farm seeds for summer and fall sowing. Select list of seasonable decorative and flowering plants.

Write for a copy and kindly mention this magazine — FREE.

HENRY A. DREER PHILADELPHIA



Group of houses erected for J. B. Dickinson, Morristown, N. J.

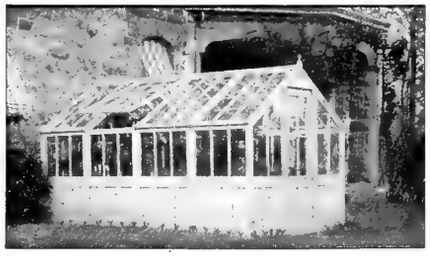
Greenhouses
What They Cost

BRIEFLY—from $250 up. In glancing through our orders for the past three years, the average price of the big and little houses we sell, figures out between two and three thousand dollars. The average used to be nearer $5,000. But in those days, only the so-called wealthy thought they could afford a greenhouse.

But now all that has changed and with the great and sane awakening to the joys of country living, there has come an appreciation of the numerous unthought-of pleasures, which for a nominal expenditure, a greenhouse makes possible.

So, where we used to sell one five-thousand dollar house, there are ten two-thousand dollar ones sold today. And as for our $250 houses, they are sprinkled all over the country.

We tell you these things in a frank endeavor to show you that, like automobiles, greenhouses are fast ceasing to be looked upon as a luxury, and are becoming one of the essentials of a complete home in the country.



$250 house, which is the health-giving hobby of Mrs. F. H. Lovell of Madison, N. J.

Let us send you our booklet showing our $250 house and a catalog showing various kinds from the modest ones to the houses up in the thousands. Then you can select the one you want and we will gladly go into the matter in detail with you.

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Factory — Elizabeth, N. J.

This is the most interesting time to visit Andorra to see our **Specimen Trees** and **Shrubs,** especially the immense stock of **Hardy Acclimated Rhododendrons, Azaleas** and **Peonies** in bloom.

Send for Price List

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WM. WARNER HARPER, Proprietor

Zenatello *Nordica* *Carolina White* *Segurola* *Pasquali* *Fremstad* *Slezak*
Destinn *Orville Harrold* *Bispham* *Cavalieri* *Maria Gay* *Nielsen* *Mary Garden*

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Parlow *Ysaye* *Bonci* *Hofmann* *Friedheim* *Scharwenka*

COLUMBIA

Columbia Records — Note the Notes

EVERY one of the world's greatest artists — without a single exception — can be heard on the Columbia Grafonola. Most of them make records especially for the Columbia — among them those named above.

Ask your dealer to play for you at least one record by each of these artists, for instance:

"Danny Deever," sung by *David Bispham*, the man who made the song famous.

"La Donna e Mobile" by *Bonci*.

"Vissi d'arte e d'amore" by *Cavalieri*.

"The Bird Song" from "Pagliacci," by *Destinn*.

Weber's "Moto Perpetuo" by *Friedheim*.

"Dich Theure Halle" by *Fremstad*.

"Liberte!"— a great record from "The Juggler" by *Mary Garden*.

"Mon cœur s'ouvre à ta voix" by *Maria Gay*.

"Ah! So Pure" from "Martha," by *Orville Harrold*.

Rachmaninoff's Prelude in C Sharp Minor by *Josef Hofmann*.

"Way Down Upon The Suwannee River" by *Alice Nielsen*.

"Mighty Lak' a Rose" — by *Nordica*, the most famous artist this country has produced.

The Arditi "Waltz Song," by *Pasquali*.

Beethoven's Minuet by *Kathleen Parlow*

The Chopin "A Flat Waltz" by *Scharwenka*.

"Song of the Coat" from La Boheme, by *Segurola*.

"Otello" records by *Slezak*—the greatest "Otello" since Tamagno.

"Depuis le jour" from Charpentier's "Louise," by *Carolina White*.

The Kreisler "Caprice Viennois" by *Ysaye*.

"Di quella pira," by *Zenatello*.

Important Notice: **— All Columbia Records will play on Victor Talking Machines; likewise all Columbia Grafonolas will play Victor Records.**

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Improved Columbia "REGAL," $50

On special terms and on approval

THE COUNTRY LIFE PRESS, GARDEN CITY, N. Y.

SEPTEMBER
1913
Vol. XVIII. No. 2

Mountain Laurel from Seed
Violets in Frames **California Gardening**
Blanching Celery **Plants for Windows**

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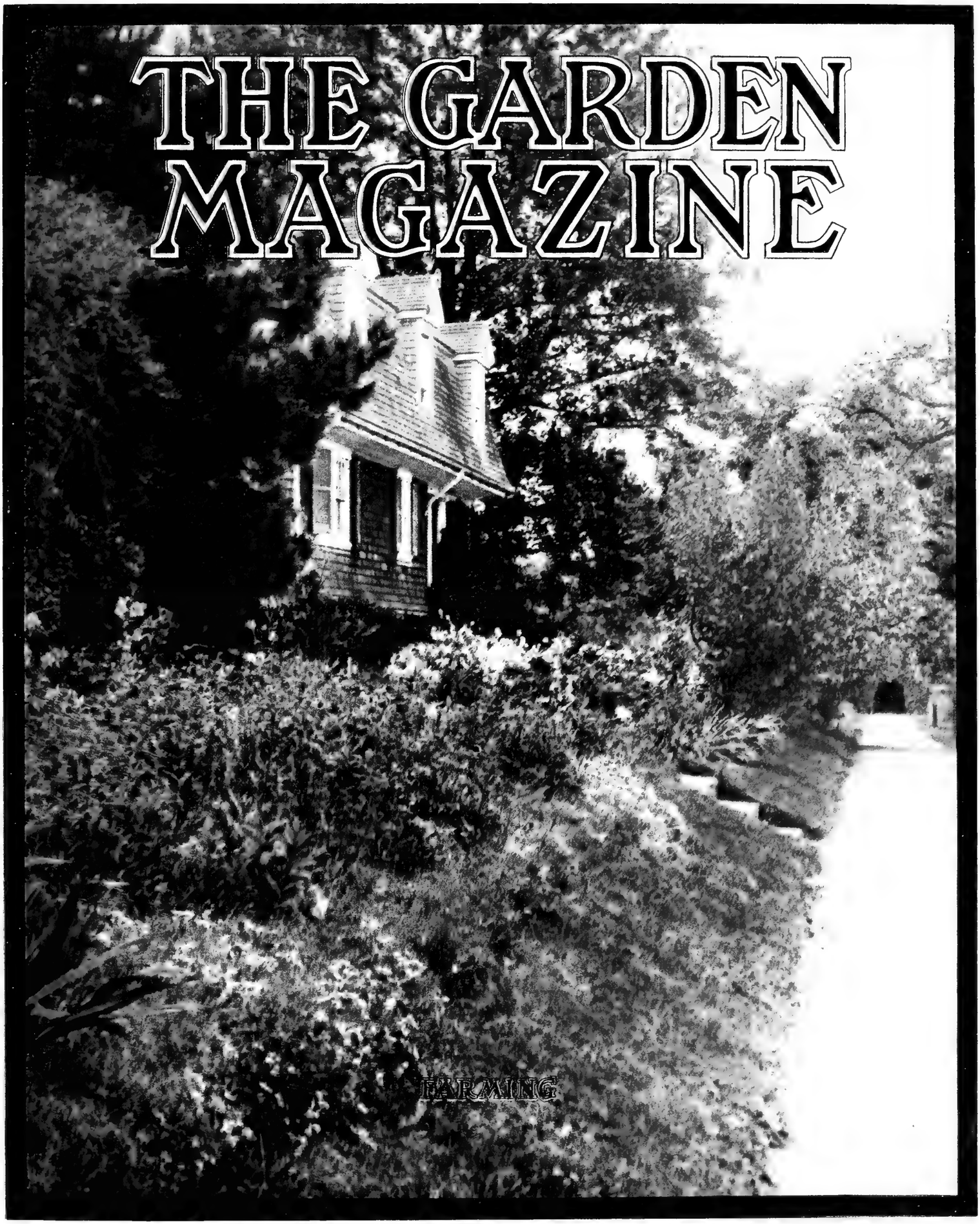
$1.50 a Year

THE GARDEN MAGAZINE



COUNTRY LIFE IN AMERICA

DOUBLEDAY, PAGE & CO.
Chicago GARDEN CITY, N. Y. New York

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World's Choicest Nursery and Greenhouse Products

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EVERGREENS, CONIFERS AND PINES. We have more than 75 acres planted with attractive EVERGREENS. Our collection is conceded to be the most complete and magnificent ever assembled in America. The varieties comprising same have been thoroughly tested and proved hardy. Our Plants are dug with a ball of earth and burlapped previous to shipping. Before purchasing elsewhere intending buyers should not fail to inspect our collection.

THE FOLLOWING PLANTS FOR INTERIOR AND EXTERIOR DECORATIONS ARE AMONG OUR SPECIALTIES:

STRAWBERRIES. Potted and field-grown in all the leading varieties. We have many thousands of Strawberry Plants and are in a position to fill orders of any size. *Ask for Special list.*

AUTUMN BULBS AND ROOTS. We grow and import quantities of Bulbs and Roots from all parts of the World.

HARDY OLD-FASHIONED PLANTS. We grow thousands of rare, new and old-fashioned kinds, including Peonies and Iris in a large variety. September delivery.

HEDGE PLANTS. We grow a quantity of California Privet, Berberis and other Hedge Plants adapted to all parts of the country.

OUR NEW HYBRID GIANT-FLOWERING MARSHMALLOW. Everybody should be interested in this new, old-fashioned flower. It will grow everywhere and when in bloom is the queen of all garden flowers. Order now for Autumn delivery.

ENGLISH IVY. We grow many thousands in trained forms and ordinary plants from two to eight feet tall.

PALMS AND DECORATIVE PLANTS. We have several acres of Greenhouses in which we grow Palms, Ferns and a large collection of Plants for Interior and Exterior Decorations.

PLANT TUBS, WINDOW BOXES AND ENGLISH GARDEN FURNITURE. We manufacture all shapes and sizes.

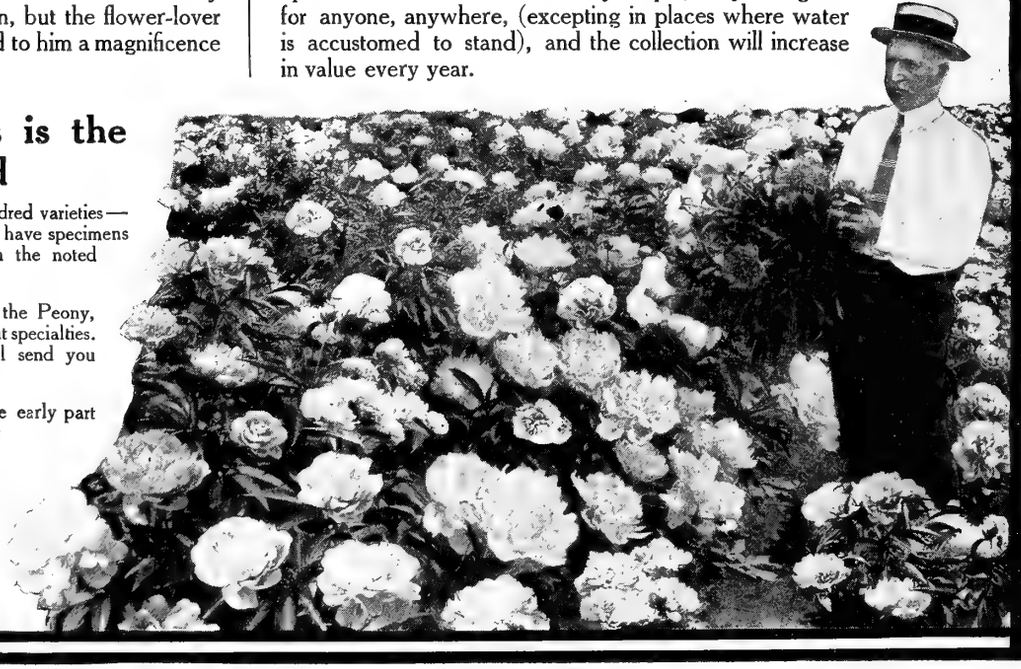
We invite Everybody interested in Roses to visit our Nursery at this time and see our Formal Rose Garden, which is planted with over 5000 plants in 250 varieties, now in Bloom. OUR ILLUSTRATED GENERAL CATALOG No. 25 DESCRIBES OUR PRODUCTS. Will be mailed upon request. ***Ask for Autumn Bulb Catalog Now Ready.*** VISITORS take Erie Railroad to Carlton Hill, second stop on Main Line; 3 minutes' walk to Nursery.

Nurserymen, Florists and Planters **Rutherford, New Jersey**

Farr's Peonies Planted this Month will Bloom for You Next Spring

No flowers equal the Peonies for splendor of bloom — not even the rose. They are truly the Queens of the hardy garden, and the joy of June is made even greater with the magnificent blooms, intoxicating with fragrance, dazzling with crimson and scarlet, dainty in pink and white. Few gardeners really know the Peony, for the sorts one commonly sees are the early red of the old-fashioned garden, but the flower-lover who plants the newer varieties will have revealed to him a magnificence of bloom almost undreamed of.

If the plants are set early this fall they will produce flowers next spring — this is the best time, for spring planting delays the flowering season a year. The plants can be used anywhere—singly, in clumps, or beds, as borders for walks and drives, or as landscape effects in the open fields. The culture is very simple; they will grow for anyone, anywhere, (excepting in places where water is accustomed to stand), and the collection will increase in value every year.



My Collection of Peonies is the Finest in the World

At Wyomissing Nurseries you will find over five hundred varieties — the largest collection of Peonies ever gathered together. I have specimens from all the famous European growers as well as from the noted growers in England and America.

My book—"Farr's Hardy Plants" gives the story of the Peony, and tells about Poppies, Irises, Phlox and other hardy plant specialties. If you will tell me what plants you are interested in I will send you a copy.

You can safely plant Irises and Perennial Poppies the early part of September — but don't delay ordering, for the earlier they are planted the better will be the results.

Bertrand H. Farr

Wyomissing Nurseries

104 Garfield Avenue Wyomissing, Pa.

Poultry, Kennel and Live Stock Directory

Information about the selection or care of dogs, poultry and live stock will be gladly given.

Address INFORMATION DEPARTMENT, THE GARDEN MAGAZINE, 11-13 W. 32d Street, New York.

Hodgson Portable Poultry Houses

Five-Section Poultry House—10x50 ft.

Sanitary, durable, up-to-date—made of red cedar, clapboarded outside, interior sheathed. Made in 10-ft sections, each fitted with roosts, nests and fountain. Open fronts, with canvas-covered frames. You can add sections at any time. Easily erected.

First Section $75.00 Additional Sections $60.00 Each

No. 0 Colony Laying House—for 12 hens Fitted complete with nests, fountain and feed trough. Sanitary—easily cleaned. One man can easily care for several hundred birds. Nicely painted—set up in fifteen minutes. A comfortable year-round house. In stormy weather the run may be covered, giving a protected scratching room. Size, 10x4 ft., 5 ft. high.

$20.00

Send for catalogue.

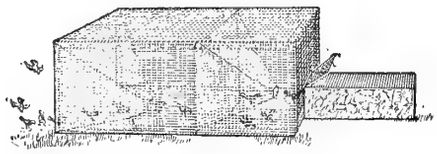
E. F. HODGSON CO., Room 311, 116 Washington St., Boston, Mass.

For Those Who Love Birds

Now is the time to get rid of the Sparrow, the chief enemy of our Native Birds.

The Dodson Sparrow Trap

is catching thousands of these pests for others—it will banish the sparrow from your place—then Bluebirds, Purple Martins, Wrens, Swallows, etc., can easily be attracted by Dodson Bird Houses. Set out the Dodson Trap now!



This is the Dodson Sparrow Trap. It catches as many as 75 to 100 sparrows a day. Works all the time. Sparrows removed once a day. Made of tinned wire, size, 36 x 18 x 12 inches. Price including receiving box, $5, f. o. b. Chicago.

NOTICE—If you have native birds about you and wish to keep them from four to six weeks longer than usual you can do so by giving them a Dodson Bird Feeding Shelf. It is delightful to feed your birds. If you don't do this they have to leave soon after the frosts come.

Write to The Man The Birds Love for illustrated folder about birds and any information desired on the subject of birds. Address,

JOSEPH H. DODSON, 1209 Association Bldg., Chicago

(Mr. Dodson is a Director of the Illinois Audubon Society)

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TRADE MARK REG. U.S. PAT. OFF.

Will reduce **Inflamed, Strained, Swollen Tendons, Ligaments, Muscles or bruises.** Stops the **lameness** and **pain** from a **Splint, Side Bone** or **Bone Spavin.** No blister, no hair gone. Horse can be used. $2 a bottle at dealers or delivered. Describe your case for special instructions and **Book 2 K Free.**

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Dollar for dollar invested, the Jersey will earn back the amount paid for her quicker than other breeds because her product brings a higher price per quart or per pound. For the home she is unsurpassed, and her low cost of keep makes her most desirable. Write now for Jersey facts. No charge.

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THE DOG BOOK

By JAMES WATSON

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The author has been a dog-breeder for forty years here and in England. Long experience as judge at shows, and as a practical fancier has been supplemented by exhaustive research.

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Bound in cloth. More than 250 illustrations.

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Anyone Can Raise Poultry with the Colony Laying House

Winter or summer, it is always healthful and comfortable. Completely protects against rats, cats, skunks, hawks, etc. In stormy weather the run can be covered, top and sides.

One man can easily raise several hundred chickens in the Colony Laying House. Completely equipped with nests, fountain and feed trough. Easy to clean and ventilate. Can be put together in fifteen minutes.

Price $20
Size 10 x 4 feet, 5 feet high.

We carry a complete line of poultry houses. Write today for free Poultry Catalogue.

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Personal instruction Expert advice.
250 Page Catalogue free. Write to-day.

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Easy to Buy and Keep.

A SHETLAND PONY

A Child's Delight

is an unceasing source of pleasure. A safe and ideal playmate. Makes the child strong and of robust health. Highest type—complete outfits—here. Inexpensive. Satisfaction guaranteed. Write for illustrated catalog.

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Large Berkshires at Highwood

We have for sale service boars, brood sows and pigs all ages. These are sired by Berryton Duke's Model, the boar that headed the first prize herd at the Royal in 1909, Highwood Duke 75th, a half brother to the Grand Champion boar at the last International, and other boars of equal merit.

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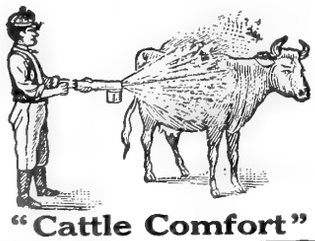
The comforts and products of a country home are increased by employing a competent Gardener; if you want to engage one write to us. Please give particulars regarding place and say whether married or single man is wanted. We have been supplying them for years to the best people everywhere. No fee asked. PETER HENDERSON & CO., Seedsmen and Florists, 35 and 37 Cortlandt Street, New York City.

THE READERS' SERVICE
gives information about live stock

The Readers' Service gives Information about gardening.

Hammond's



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Keeps Cows, Horses or Mules free from Flies, Gnats and other pests. It is cheap and effective. For pamphlet on "Bugs and Blights" write to

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Illustration Department.

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The Readers' Service will furnish information about foreign travel

THE TALK OF THE OFFICE

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

"LADDIE"

IF WE confess each month to renewed enthusiasm about Mrs. Porter's new novel, "Laddie," we hope that our readers will bear with us. It is such a genuine fresh and honest transcript of the life of a wholesome Middle West family in the days when Indiana perhaps held more romantic interest than it does to-day, that we feel sure it will give pleasure to the host of readers Mrs. Gene Stratton-Porter has gathered about her. The people whom Mrs. Porter describes are the people who made our country a good place to live in, and they are worth while reading about.

We printed 150,000 copies, and three weeks before publication we had to order paper for 25,000 more.

JOSEPH CONRAD

There are comparatively few authors whose work all other authors admire. Joseph Conrad is recognized and accepted as a master of English, notwithstanding that he is a Pole. Every day his fame is extending, more people are learning to read and appreciate him, and if you want a good book to begin on, read the new volume, "'Twixt Land and Sea."

His other books published by us are:

"Falk," "Lord Jim," "Romance" (written with Ford Madox Hueffer), "The Point of Honor," "Youth," besides excellent volumes issued by other publishers.

THE REGAL LILY

Among the flowers in the Country Life Press gardens this summer there was one plant in particular, a lily, that was the centre of attraction: the Regal lily, which comes from China. Indeed most of our every-day favorites are Chinese — the spireas, the forsythias, the hydrangeas, Memorial rose, and also a goodly number of things which have come to us from Japan were originally taken from China. The interest in new Chinese plants lies in the fact of the climatic parallels of our country and Western China.

This new lily is but one of over 1,100 new species of plants recently discovered and brought into cultivation by Mr. E. H. Wilson, now connected with the Arnold Arboretum of Boston. He has travelled farther into Western China than any other white man and pushed beyond the limits of Fortune and Maries. He has brought back new plants the likes of which those pioneers never even imagined. We cannot tell more about Mr. Wilson here; we

are watching some of his plants grow in our gardens, and we are publishing his book, "A Naturalist in Western China," in which he gives his own versions of his travels into this wonderfully rich country.

Not only to the plant lover but to the mineralogist and to those interested in any branch of natural history, this book of Mr. Wilson makes its appeal. It is a personal, first hand account of things as he saw them — and things which no other white man has ever seen.

FALL BOOKS

Following out our slogan, "Fewer and Better Books," we announce for this fall even fewer titles than last year.

In these days, when 11,000 books are issued each year, it becomes a matter of energy and skill to get the public's attention to a new book and we have found by painful experience that one can't take efficient care of a large number of titles: so we pick the books with which we think we can succeed, put all our force and care behind these, and hope that the day will come when dealers and readers can say that if a book is issued by Doubleday, Page & Company, it has a reason for existence and can be safely bought.

This is our publication list, without descriptions or comment. Advertisements depicting the merit of these volumes will be found elsewhere in our magazines.

FOR PUBLICATION SEPTEMBER 20TH, 1913

The Book of Useful Plants	By Julia Ellen Rogers
Jack Chanty. A novel	By Hulbert Footner
The Confessions of Arsène Lupin	By Maurice Leblanc
African Camp Fires	By Stewart Edw. White
Out of the Dark	By Helen Keller
The Spotted Panther. A South Sea tale	By James F. Dwyer
Refractory Husbands	By Mary Stewart Cutting

FOR PUBLICATION OCTOBER 4TH

Gold, A Tale of California	By Stewart Edw. White
The Man Between. A novel	By Walter Archer Frost
Children's Book of Christmas Stories	Edited by Asa Don Dickinson and Ada M. Skinner
The Best Stories in the World,	Thomas L. Masson, Editor
The Knapp Method of Growing Cotton	By H. E. Savely and W. B. Mercier
Carlo. A book of new characteristics	By A. B. Frost
Threshold of Science Series: Volume I, Zoölogy	By E. Brucker
War and Waste	By David Starr Jordan
Boy Scout Hike Book	By Edward Cave
The Mixing. The Tale of a Neighborhood Association	By Bouck White

FOR PUBLICATION OCTOBER 23D

In Search of a Husband	By Corra Harris
The Golden Barrier. A novel	By Agnes and Egerton Castle
The Friendly Road	By David Grayson, Author of "Adventures in Friendship."
In Thackeray's London	By F. Hopkinson Smith
Folk of the Woods	By Lucius Crocker Pardee
Under the Christmas Stars	By Grace S. Richmond
A Son of the Hills	By Harriet T. Comstock, Author of "Joyce of the North Woods."
Wild Animals at Home	By Ernest Thompson Seton
The Lovely Lady. A short novel	By Mary Austin
The Vanishing Race	By Joseph K. Dixon

A New Novel

By

Grace S. Richmond

Author of

"Red Pepper Burns"
"On Christmas Day in the Morning," Etc.

Mrs. Red Pepper

"The remarkable thing about this story is that while the whole atmosphere is so quiet and restful, the reader is never allowed for a moment to lose his interest, and he leaves the tale with a wholesome affection for the characters."—*The Boston Herald.*

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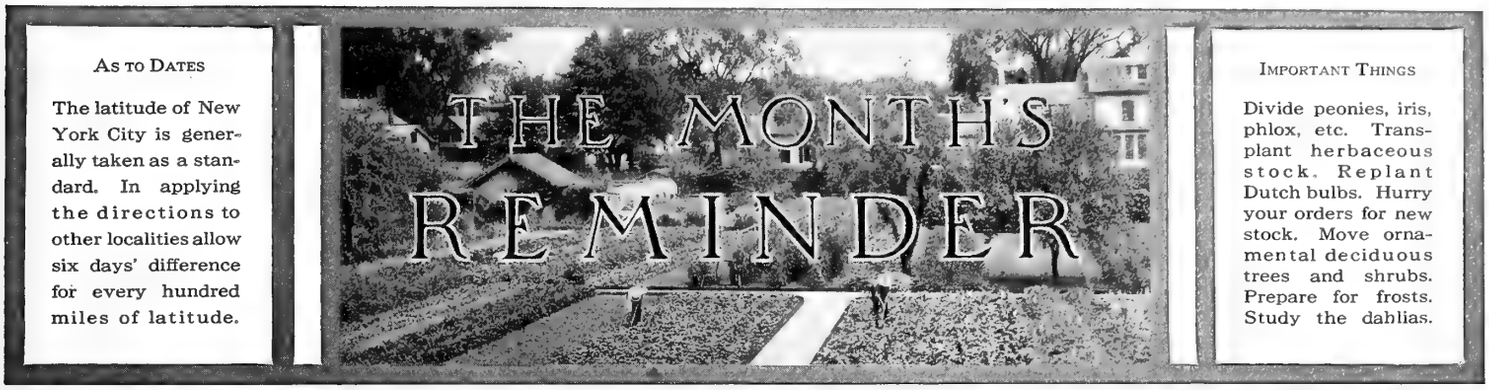
Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879
F. N. DOUBLEDAY, President HERBERT S. HOUSTON, Vice-President S. A. EVERITT, Treasurer RUSSELL DOUBLEDAY, Secretary

For Foreign Postage add 65c. For Canada add 35c.

The Garden Magazine

VOLUME XVIII SEPTEMBER, 1913 NUMBER 2



THE luckless city dweller, returning from his vacation to the stuffy flat and dusty desk, is not the only person who must get back to work in September. After a month of comparative ease, of occasional waterings and cultivatings, the gardener, too, must don his working togs and make active preparations for future results. There are a few things to be done right now. For instance:

All sorts of herbaceous plants can be started; if they are already growing in the garden, divide them, either according to the methods outlined on page 179 of the April, 1913, GARDEN MAGAZINE, or simply by cutting apart the larger clumps with a sharp spade or knife.

If you want plants that you are not growing already, buy the roots from the seedsman or nurseryman, who will supply them at just the right time. Dog's tooth violet, lily-of-the-valley, crown imperial and lycoris are illustrations of the sort of thing that can be started most easily.

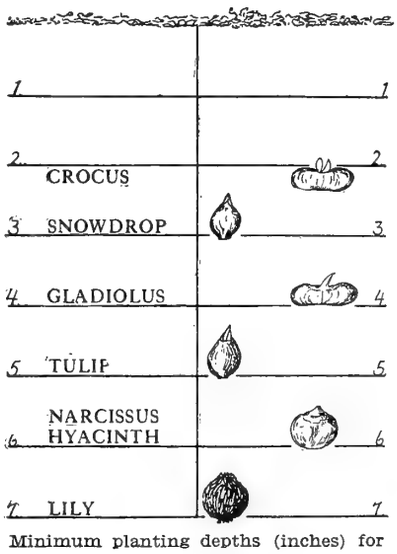
Seeds of all these same hardy perennials can be sown now, either in the border or in a coldframe. In the first case, you will have to mulch them over winter; in the second, they may be protected from the cold in the frame or even brought indoors and kept growing until early spring.

Of the annuals, the sweet pea gives successful results from September planting. Wait till the end of the month, then make the furrows deep and keep the seedlings almost covered with soil as they grow. The opium poppy can also be started now.

Of the bulbs, there are two classes to be started at once. First, the Dutch varieties, such as hyacinths, tulips, crocuses, scillas, etc., which must be buried in moist sand or ashes, or if started in a bulb glass, kept in a dark, cool place until a generous root system has developed. Secondly, there are the Cape bulbs: the freesias, ixias, oxalis, spiraxis, brodiaea, and others, which may be started in pots and kept wherever they are to grow permanently. Both of these should provide blooms a week or more before Christmas.

September is above all things the peony planting month; and up to the 15th conditions are just as good for evergreen planting as any part of August.

In the vegetable garden it is not too late to sow lettuce, radishes, spinach, chicory, chervil, endive, and corn salad outdoors. Such of these as will not mature this fall, or at least before the snow comes, will remain alive and supply early greens next spring. Cabbage and cauliflower can be started in coldframes and planted out next spring for an extra early crop.



Minimum planting depths (inches) for bulbs

Cut the asparagus tops before the end of the month and burn them, together with all the other litter from the garden.

Frosts are liable to occur after the 20th, so the following crops should be completely harvested before that time: Tomatoes, onions, corn, peas, beans, squash, melons, okra, eggplant, peppers. Turnips, beets and carrots can be left a little longer, but parsnips and salsify are the only species that are improved by being frozen in the ground.

Now of all times don't waste the garden's bounty. There are all sorts of preserves that can still be made and of which you cannot have too many. The late fall rhubarb is the only kind that makes good marmalade, for instance. Even if you think you have more preserves than your family can use, remember that half a dozen jars of home made pickles, jellies, etc., are among the best of Christmas presents for those shut-in city relatives.

Early apples have been bearing for some time and if you are wise you will consume them as rapidly as possible. They are in general poor keepers and you must wait for the Baldwins, russets and other winter sorts to store away.

If growth has ceased, cut back the bramble canes to three feet, removing in addition all old wood — that is, the canes that have borne the past season.

If your land is well drained, this is a good time to plant fruits, either bushes or trees, but if there is any danger of wet feet over winter hold off the trees until spring, and spend the fall putting in tile drains.

There must be no more cultivating, lest the trees be stimulated into making late growth that will succumb to the first frosts. It is not yet too late, however, to sow some cover crops, such as rye, vetch, etc., not only between the rows of trees and bushes, but also over all bare spaces in the garden.

The possibility of frost has already been mentioned but don't wait for it in ignorance. The United States Weather Bureau can supply you with temperature reports for your immediate neighborhood for a sufficient number of years to provide averages from which you can estimate when a frost is liable to occur. Conditions most conducive to it are still air, clear sky, and a lack of humidity.

In case the mercury drops suddenly, there are three means of protecting the tender plants: Either cover them with newspaper, burlap, loose straw, corn stover, or something of the kind; increase the moisture content of the atmosphere by spraying, or raise the temperature of the air by lighting smudge pots or bonfires around the garden. It is well to get

plenty of mulching material on hand to use later around the perennials, the shrubs, and along the borders, but don't make any heavy application of this material until cold weather has really arrived.

Chrysanthemums growing outdoors should be lifted before long and set in benches or pots under glass. There will be a few late plants, also, in which you will have to choose or, as the florists say, "take" the bud, that is to produce the best flower.

As soon as the dahlias, cannas, gladioli, and elephants' ears have stopped growing, or immediately upon their being touched by frost, cut the tops dig the bulbs, dry them for a day or so, remove the dirt and store them in a cool moist place where the temperature is not likely to go below freezing. Moist sand is one of the best mediums in which to keep dahlia tubers.

From the other plants still growing, keep the flowers picked and the seed pods removed in order to extend the season as long as possible.

If there is a dull spot in the border or among the masses of shrubbery during this month, why not procure some of the shrubs that are noted for the brilliance of their September fruit? Among these we have the mountain ash, with red or yellow berries; the dogwood, in both tree and bush form; Siberian crab, with berries of various colors; sour gum, with blue-black fruit; several varieties of hawthorn; the barberry; the spindle bush; the winterberry; the sea buckthorn; and at least two varieties of privet. The average owner of a privet hedge knows nothing about the beauty of the berries this plant bears, since he clips it before it can blossom. Isolated examples, however, can be allowed to grow freely and enrich the scenery for all seasons except winter.

One of the most attractive blue-berried shrubs, by the way, but a rather rare type, and usually tender, in the latitude of Boston, is *Symplocos cratægoides*.

There are two kinds of indoor work to do: First, start a mushroom bed in any out-of-the-way shed or cellar, or even under the benches of the greenhouse; and secondly, attend to the duties associated with the greenhouse itself. See that all the glass is in place and whole; that the ventilators and doors fit tightly and stay closed when they should; that the benches are soil tight and their supports firm and unrotted. Get plenty of soil indoors, for future potting work, for you won't enjoy digging it after it has frozen six inches deep.

In the greenhouse, it is time to put the cuttings from bedding plants into the benches. Azalea plants for winter bloom can be bought now and forced gradually. Seeds of cineraria, cyclamen, and calceolaria can be sown.

Among things that bother the novice and that he likes to read about are : (a) The amount of flower seeds needed for definite areas — there are plenty of vegetable planting tables, but few for annual flowers; (b) The really best of the season's novelties in flowers and vegetables. (c) The most effective way to fight the squash borer, the rose chafer and the aster beetle. These are merely hints. Every gardener's experience must have supplied some things that are worth telling to readers of THE GARDEN MAGAZINE.

News Notes and Comments

CHESTNUT BLIGHT

PERHAPS, after all, we may be able to grow a few chestnuts under certain conditions and with care. The dread blight or bark disease that has destroyed millions of dollars' worth of timber and ornamental trees is capable it seems of some control even in the North Atlantic States. The investigations of the Pennsylvania State Commission seem to show that individual trees and small orchards may be saved. The disease is by no means exterminated; the possibilities are simply that trees can be grown in spite of it.

The disease is caused by a parasitic fungus, and spores are carried by rain, birds, insects, animals or man, and gain entrance to the inner bark through some injury or mutilation. The seat of infection becomes an area of sunken discolored bark, often girdling the trunk or branch, and covering a disorganized, discolored, "punky" lesion of inner tissues. In the case of a girdled branch or stem the part above the girdling cannot be saved. The first result of the investigations pursued by the Federal Department of Agriculture, the Pennsylvania Commission and other agencies, was the knowledge that trees in the first stages of the disease or those superficially affected, could often be saved by cutting out the diseased portions, burning them, and painting the wounds with tar or a creosote preparation, strict antiseptic precautions being observed throughout.

Now comes the information that bordeaux mixture sprayed every two weeks during summer has been successfully used in preventing the infection of healthy trees. The Commission states that "it does appear true that the chestnut blight can be controlled, more or less, in orchards and in the case of individual trees on lawns where it is practicable to give time and attention to single trees." Furthermore the Northern Nut Growers' Association is "inclined to recommend the setting of good chestnut trees in a very limited way, provided that the owner is prepared to watch them and to attack at once any manifestation of the blight, by cutting out and treating with antiseptics, much as one would treat the pear blight."

SEEDLINGS WILTING

POSSIBLY the condition described in the following letter is a familiar one to many gardeners, who, also, are not aware of its cause:

"Having no hotbed, I started my tomato seeds in a flat 2 inches deep, transplanting them to another box 4 inches deep, placing them 4 inches apart. They are now six to eight inches high and in the last few days have commenced to lose their lower leaves which droop, turn yellow and drop off at a light touch. Some of the leaves have a parchment-like spot and others a drop of water (?) on the under side, when there has been no water near them. What is the trouble and how can I cure it?"

The yellowing and falling of the lower leaves is not uncommon and, where not merely the shedding of useless, immature tissue, may result from several causes. Undue crowding of the plants, scarcity of sunlight except from directly above, excessive or insufficient moisture in the soil, and insufficient depth or quality of soil may all effect it.

The appearance of "parchment-like spots" and drops of water on healthy leaves suggests a further physiological condition due to augmented root pressure. It is noted by botanists that when the air surrounding plants is heavily charged with moisture and is cooled rather rapidly while the soil about the roots remains warm, sap may be forced through the cell walls to collect in the form of drops on the leaf surface. This is especially likely to occur on the succulent leaves of tomatoes, since the fine hairs which coat them tend to collect and hold the moisture. The temperature conditions involved are exactly those that develop in the evening — whether indoors or in the hotbed — when the air becomes cool and the soil, being more retentive of heat, becomes warmer.

The parchment-like spot might then be either the result of sun burning through the collected moisture, or a localized attack by some fungus enemy stimulated into activity by highly congenial conditions, viz., the drop of moisture and the warming of the air, with the coming of the next morning.

There need be no alarm felt, therefore, and no especial "cure" attempted save, perhaps, a little more generous ventilation.

Plant physiology when applied to common garden and greenhouse activities is far from the dry and useless subject it may seem. For a dull rainy day or a piping hot one, whenever you are satisfied to stay indoors pick up Sorauer's "Physiology of Plants," or the bulky "Natural History of Plants" of F. W. Oliver, or any of the standard and more modern text books. You will come across, in the lives of humble plants, many an "almost human" attribute of which you never had a conception.

Growing Kalmias and Rhododendrons from Seed

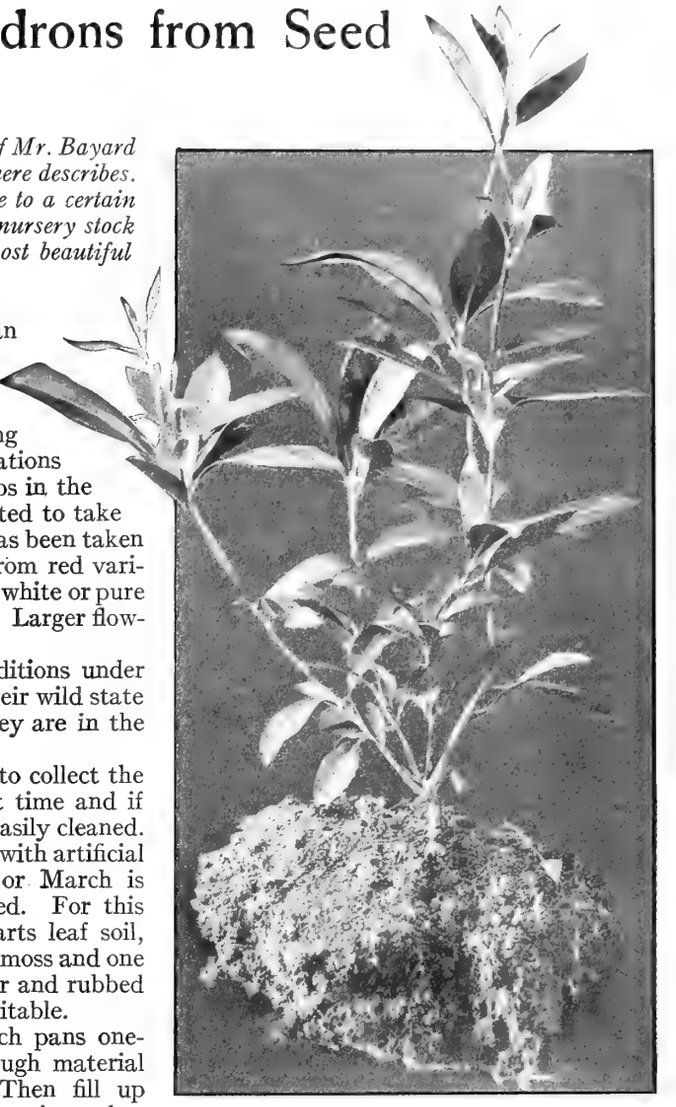
By Wm. Anderson Massachusetts

[EDITOR'S NOTE: *The writer in his capacity as superintendent on the estate of Mr. Bayard Thayer, at South Lancaster, Mass., has been most successful in doing what he here describes. Most of the plants offered in the trade are native collected material, and while to a certain extent its gathering may be justified, it were surely far better to use seedling nursery stock which is not only more safe in transplanting but increases the stock of our most beautiful native shrubs, an object which should be dear to our hearts.*]

MOUNTAIN laurel (Kalmia) and rhododendron, native hardy, evergreen shrubs are so fully appreciated as garden plants that our countrysides are being denuded. That might be all well enough, but for the fact that an enormous percentage of such collected plants die. On the other side is the comparative ease of raising plants from seed with the certainty of getting better plants in the long run. This is especially true of the kalmia. This can best be collected when four or five years old, (or when from one to two feet in height). Transplanting affects their growth and they show it for several years. On the other hand, I have found that in four years from the time of sowing the seed, Kalmia plants such as shown in the adjoining illustration can be obtained. These stand the transplanting with practically no loss of growth or strength.

Many people who have tried raising kalmia from seed and have been unsuccessful believe that it is cheaper in the end to buy the plants from a dealer. I have raised from seed about 300,000 plants and careful records show that it has been cheaper and better than to have bought them.

Seeds from plants having pink or nearly red flowers produce plants which are more vigorous and rapid-growing than seed from the lighter colored or nearly white varieties. From the many thousands of seedlings that I am now raising many decided breaks or variations in color of flowers, and perhaps in the habit of the plants, are expected to take place. For this reason seed has been taken from the nearly white, and from red varieties with the hope that a pure white or pure red variety may be obtained. Larger flowers are also hoped for.



Home grown mountain laurel plant (Kalmia) three and a half years from sowing seed. Note the strong fibrous root system

As far as possible the conditions under which these plants thrive in their wild state ought to be imitated while they are in the greenhouse or nursery.

November is the best time to collect the seed; it is not ripe until that time and if gathered earlier cannot be so easily cleaned. If greenhouse accommodation with artificial heat is available, February or March is the best time to sow the seed. For this purpose a mixture of four parts leaf soil, two parts chopped sphagnum moss and one part sand, well mixed together and rubbed through a fine sieve is most suitable.

Select clean 6-inch or 8-inch pans one-third filled with crocks or rough material to give perfect drainage. Then fill up with the soil mixture and tamp it moderately firm. Give the pans one good watering and sow the seed, not too thickly, and do not cover with soil. Place the pans on a well-shaded bench in a temperature of from 55 to 60 degrees. If the seeds are sown in February or March, and the greenhouse has been kept moist and well shaded, very little watering will be needed until the seeds germinate, which should be in three or four weeks after they have been sown. If they do get dry, water carefully and thoroughly and then do not water again until they are dry. That is a very important point to keep in mind. The majority of those who have been unsuccessful in trying to raise kalmia from seed may trace their failures to overwatering.

Seed can also be sown on pure sphagnum moss; it germinates freely then and grows well up to a certain point, but the seedlings cannot be so early or safely transplanted as when grown in the soil.

When the little seedlings have made three or four small leaves, they can be safely handled for the first time. They will reach this stage of growth in about three months from the time the seed has been sown. Transplant from the pans into flats, in which drainage material has first been placed, using a mixture of eight parts leaf soil, three parts loam and two parts sand, thoroughly mixed and passed through a half-inch screen, and pressed moderately firm into the flats, but not hard.

Rhododendron plants 18 months old — These are seedlings of new species collected in China by E. H. Wilson

For kalmias, the black material known as peat had better be avoided. Rhododendrons and azaleas may do fairly well in it but kalmias do not like it. For the first summer the seedlings do better if kept in the greenhouse, where watering and shading can best be attended to. If greenhouse space cannot be given transfer them to a frame and shade with lath shades. If there is any indication of damping among the seedlings during the early stages of growth, increase the ventilation and sprinkle the affected parts with hot sand which will not affect the seedlings but simply check the damping.

If coldframes are depended upon instead of the heated greenhouse, sow the seed about May 15th, and let the plants grow on in the seed pans for the first season,

being kept carefully away from frost during the winter. If a cool cellar is available, they will keep best in that. The following May (or about one year from the sowing of the seed) transplant the small seedlings into flats. Use a pair of small tweezers for this work being very careful not to bruise or injure the plants in any way. Then place the flats in frames, and for the first summer leave the glass sash on them, with lath shades placed over the glass. They should have plenty of light, however, and a free circulation of air which is provided by fastening the sash open. Remove the shades toward the evening but leave the glass on, to protect against heavy showers during the night.

In April, or before the young plants begin to make their growth for the third season, transplant into frames. The soil in the frames should be especially prepared; there is nothing better than light loam into which three inches of leaf soil has been forked.

Seeds of rhododendron, laurel, etc., may be sown on moss in pots kept in frames and will give equally strong plants as if sown in greenhouse

Plant at least four inches apart and shade with lath until about September 1st. Then remove the shades and expose the plants to the full sun during the fall months, so as to ripen the wood. In New England the plants at this stage should have some winter protection; about the end of October I give a mulch of half rotted leaves and about one month later pine or hemlock boughs are laid over. This gives protection from both cold winds and frost. In spring when the boughs are removed, the mulch of leaves can remain. Nothing will do the young plants more good for it keeps them cool and moist during the summer months and, as the leaves decay, the plants root into the material, making fibrous roots, which can be transplanted to their permanent location without injury.

Rhododendrons and hardy azaleas can be raised from seed very successfully, in exactly the same way as kalmias; they grow much more rapidly, require less attention, and can be more easily handled; they are not so liable to "damp off" in the early stages.

Plants for the Winter Window Garden—By Gladys H. Sinclair, Michigan

QUANTITY OF BLOOM IN BRIGHT COLORS WITH FINE GREENERY ALL WINTER—EASILY GROWN PLANTS ADAPTED FOR INDOOR CULTURE

WHEN window plants are mentioned one thinks first of geraniums, proof of "the survival of the fittest." Geraniums are everybody's flowers because they will live under everybody's conditions; they propagate easily and their foliage always looks well. But geraniums should not be counted on to bloom much until after Christmas, especially if they bloomed in summer. Geranium slips rooted in August and kept growing briskly are counted best for winter bloom, but I have known old plants to do marvelous things. Wet sand and sunshine will root geraniums swiftly. Make the cutting just below a joint and sink it an inch. It will root nearly as well in water and sunshine. When roots are thrifty, plant in a soil made of equal parts of garden loam and old manure, which is not a bit too rich for geraniums. Don't use a big pot at first, and let the roots show outside the soil when the ball is out of the pot before repotting.

Pinch out the tops till you have a bushy plant with six or eight branches in a medium sized pot with drainage coal in the bottom. When this is root-bound it must bloom. That is the law of geraniums and it can't help blooming. If you are planting a box of geraniums instead of pots, crowd them. You want blossoms, not leaves. Have the box eight inches deep or less. Give geraniums all the sunshine available and water when the top of the earth looks dry, soaking them well. Sixteen plants, some old ones, some "slips," were taken up after frost from the yard where they had bloomed all summer and were crowded into a box twenty-six inches long, twelve wide and eight deep. The ends of old plants were broken off, they were kept in the shade a week and sparingly watered, then set in the south window. From Thanksgiving to May they bloomed steadily, from ten to twenty blossoms at a time. The touch of frost forced them to rest a bit and the old ones did better than without it.

Impatiens will root in water and will grow rapidly in rich soil

Obconica primroses last longer than the Chinese type, but have smaller flowers

Next to geraniums come primroses; in fact, some rank them first. They are not so easily propagated, needing to be sown in early spring and repotted four or five times before fall, the pots plunged in sand. Sprout primrose seeds only in sandy loam, not the fibrous earth the plants delight in, or you will never see half your seeds come up.

But blooming primroses cost only twenty-five to fifty cents in the fall and how they blossom! Obconica varieties are better than Chinese. Chinese have prettier leaves and larger individual flowers, but the clusters are comparatively few and they fall and look ragged much quicker. Six pots of obconica primroses, pink and white would fill a ordinary window with beauty all winter. Grow them in as near sixty degrees as possible and water when the earth looks dry. If grown from seed, always pot so the crown is well above the earth and never let the young plants get root bound till they have finished growth.

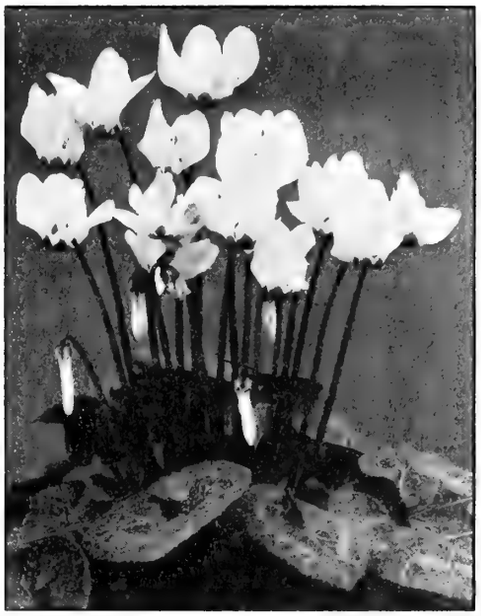
Don't throw away primroses in spring. Plunge the pots in a half shady place and let them rest. Most of the leaves will die. Repot in spongy soil in August, set in an east or north window and water. They will bloom nearly as well as young plants. Primroses are especially valuable because they will bloom freely in north windows.

A treasure for quantity of bloom and ease of culture is impatiens, also known as everbloom, water balsam, etc. It roots readily in water and will there grow and bloom. Rich loam, with a third old manure or a little bone meal, makes quick growth and strong color. Their chiefest need is plenty of water. Pinch back the plants severely to keep them from growing leggy and producing but few blossoms.

The green aphis is apt to bother impatiens. The remedy is washing well with warm soapsuds into which a few drops of kerosene have been boiled. If the leaves droop badly, the soil is sour. Give clean earth with sand in it, look well to the drainage, and let the sun shine on the soil.

Like all the chrysanthemum family, the Paris daisy or Marguerite needs rich soil and plenty of sunshine. Given these and kept clean, which means dipped or thoroughly sprinkled once a week, this favorite plant will bloom brightly from mid-December to summer. Partially withhold water in late summer, and repot in September; or take cuttings in spring for next winter's bloom. They can grow in the garden.

I wish more window gardeners knew the beauty of astilbe, usually called spirea. Feathery flowers are scarce indoors, white is always at a premium and the snowy plumes of astilbe are most lovely. The



Cyclamen has pretty leaves as well as showy flowers. A cool place is the secret of success with it

More people ought to know the spirea as a window or garden plant. It is quite hardy and now comes in many new varieties, white and pink.

blossoms last a long time and the pyramids of buds continue coming for six weeks. The plant should go into the garden in spring, but never in sun. An eastern exposure is good. Pinch out the buds, if any form. If it grows too big for the house, pot only a part of it in September. The plant is hardy and the part left out will bloom the next summer. Astilbe likes rich soil, rather heavy than light, plenty of water and an east window or partial shade from a south window.

Cinerarias are among the showiest of window plants and always greatly admired, but they are thought to be difficult to grow. A little understanding of their requirements makes them easy to grow. They need much water but their fine roots form so perfect a mat in the earth that water can scarcely penetrate from above. Soak them two hours in water deep enough to cover the pots, twice a week. The other main difficulty is aphis. Grow the plants in a temperature not above sixty degrees, making the air as moist as possible by keeping water evaporating in the room, and spray with suds and kerosene. Cinerarias grow from seed very easily and the young plants are sturdy from the first. The magenta shades should be avoided as they clash with other flowers. Choose the pure white, the clear blue, or the new warm red.

Azaleas, while captivating, are also counted hard to grow and they do often drop flowers and leaves in distressing fashion when first brought home. The reason for this is usually too little water, both at the roots and on the leaves, and too much heat. Azaleas, like cinerarias, should be soaked twice a week. A light sprinkling on the leaves every day or two helps the plant and does not hurt the flowers.

Azaleas are "grown cool"— that is, in a temperature of forty to fifty-five degrees. The seventy degrees found in most living rooms is too much for them and the air is too dry. So keep them in a cool hall or dining-room with vapor forming on stove or radiator all the time. As soon as a bloom withers take it off with its stem, so no seed will form. Take as good care of the plant as ever when the flowers are gone for now come the new shoots and buds for another winter. The shape should be kept round, so pinch back shoots that outgrow the rest. Shorter ones will spring from the leaf axils, thickening the plant. By the first of June sink the plant in a hot sunny place out-of-doors and soak it well every day. By mid-September take it to the porch and after a good frost to its cool window inside.

Cyclamen plants have decorative leaves as well as dainty flowers; the white ones are especially charming. When bought in winter they should be kept cool. Sixty degrees through the day and fifty at night gives the best bloom. But next a loose

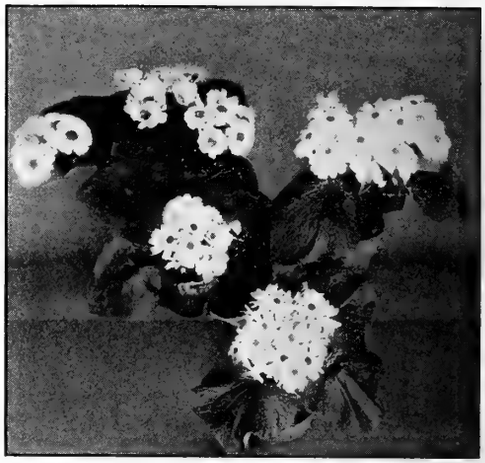
The Paris daisy wants sunshine and rich soil, with a "rest" in late summer

window the air is often as cool as this, while the room registers seventy. An east window is best for cyclamen and just a medium amount of water and sunshine. They should bloom straight through till May. Plant them in the ground then with a northern or eastern exposure and they will care for themselves till fall. Give them rather small pots, ordinarily rich soil and the east window again for another season of bloom. Cyclamen will not stand manure that is at all fresh, or liquid manure.

Petunias make excellent window plants, especially where conditions are not of the best. Instead of the magenta shades grow the lovely ruffly whites and silvery pink tints which are just as cheap. Take up an old petunia plant in the fall, cut the stalks nearly to the ground, pot it in rich earth in a rather small pot with good drainage, and set in a cool window for a while, giving only a little water. As the plant sprouts and grows thriftily, move it to a south window and increase the water, sprinkling once a week for cleanliness. Blossoms will follow blossoms all winter and their fresh brightness is most welcome.

Snapdragons, treated precisely like the petunias, will bloom from Thanksgiving till March. The tall kinds require considerable room and the half-dwarf sorts are better for the house. Often one can find young plants in fall growing about old ones in the garden. These succeed remarkably. One can have snapdragons in white, several pinks, orange, warm velvet crimson and lemon yellow. The colors are so clear, the plants so spruce and bright, and the flowers so plentiful that few cheerier things can be grown for one's self or as gifts.

Plants (especially such heavy feeders as geraniums, petunias and marguerites), are



Cinerarias need much water and a cool place. Select colors with care

apt to act tired after several weeks of steady blooming. If the plants are clean and healthy, fewer flowers and paler colors are sure signs of starvation. A teaspoonful of fresh bone meal may be stirred into the earth but liquid manure is better. A pail of manure water in the basement is never offensive if kept covered, and half a pint, the color of weak coffee, given once in two weeks, heartens the plants wonderfully with no danger of their getting too much food at a time.

Which Shall It Be? — By Wilhelm Miller, Illinois

A NAKED UGLY YARD, OR A GARDEN SUCH AS ANY WOMAN CAN MAKE UNAIDED, AND WITH LITTLE OR NO EXPENSE, IF SHE HAS THE LOVE OF FLOWERS AT HEART

HERE is a lesson that ought to go straight to the heart of every one, rich or poor, who has a spark of humanity in him — the story of this humble, cottage garden. It is the home of Mrs. Fenn, who lives in Ottawa, Ont., and does all the work herself, except what help an invalid daughter can give. I have seen a great many gardens that suggest money; here is one that suggests love — love of home, love of outdoor life, love of flowers. Contrast it with its surroundings!

Very little money has been spent on this garden. You can see that. But every plant speaks of daily care. It is often said that certain people have the "growing touch," that "anything will grow for them." There is something in the old saying. I saw no failures in Mrs. Fenn's garden — no plant that sulked or looked unhappy. It may be all sentimentality and moonshine but why do people repeat the old saying generation after generation unless the flowers know and love the hand that cares for them?

There are tens of thousands of cottage gardens in the Old World equal to this garden of Mrs. Fenn's, but in our great, proud, wealthy America how often do you see its equal? Have you ever seen a cottage garden in the United States more eloquent of the love of flowers?

Nearly 200 species of flowers, they say, are in Mrs. Fenn's garden. I should not be surprised. I noted sixty-four myself and then gave up in despair, for no long list of names can give the most precious part of a garden — its meaning, or spirit. Any one who really loves flowers can have an altogether lovely garden without a single dollar's outlay. That seems to be the message of this garden.

For Mrs. Fenn has gotten many of her flowers by exchange. For example, you make a success of phlox and share it with your neighbors; they bring you the surplus of their chrysanthemums. Then, too, Mrs. Fenn has received many gifts. The Horticultural Society of Ottawa has given her many of her rarest plants. There is another old saying, "To him that hath shall be given." A person who loves flowers unconsciously attracts everybody. You cannot help giving the best you have to the person who will appreciate it most, care for it best, and develop the highest possibilities in it.

Most of the flowers in this garden are annuals, i. e., they are grown from seed every year. On August 19th I noted the following annuals in flowers: Shirley poppies, sweet peas, China asters, larkspurs, sweet alyssum, Drummond's phlox, Japanese pinks, balsams, stocks, snapdragons, petunias, verbenas, calliopsis, sunflowers, cosmos, salvia, crimson flax, scabious, zinnia, love-in-a-mist, celosia, and pansy.

Of tender plants the following were in bloom: Oleander, geranium, bedding lobelia, ageratum, hydrangea, begonia, alternanthera. Other tender plants were English and Kenilworth ivy, fuchsia, coleus, abutilon, dusty miller and golden privet.

Of hardy perennial flowers the following were in bloom: Shasta daisy, hollyhocks, plume poppy, golden glow, phlox, aconite, coral bells, hepatica, larkspurs, columbines, pearl achillea, bellflower and funkia. Other perennials were florist's spirea, ferns, sedums, golden feather and an herb whose leaves had the odor of pineapple.

Of bulbs, gladiolus, white speciosum lily and golden banded lily of Japan, were in bloom. In May, they say, 1000 tulips bloom in this garden.

Of vines the following were in bloom: nasturtiums, wild cucumber, wild clematis and white maurandya. Other vines on fence, porch or window box were wild grape, Virginia creeper, and cobœa — the latter forming the centrepiece of the flower garden in the backyard.

One of the finest plants of any land was a specimen of the Frau von Spieman phlox, a fine rose pink flower with a carmine centre. The clump grew about four feet high and bore about sixty trusses.

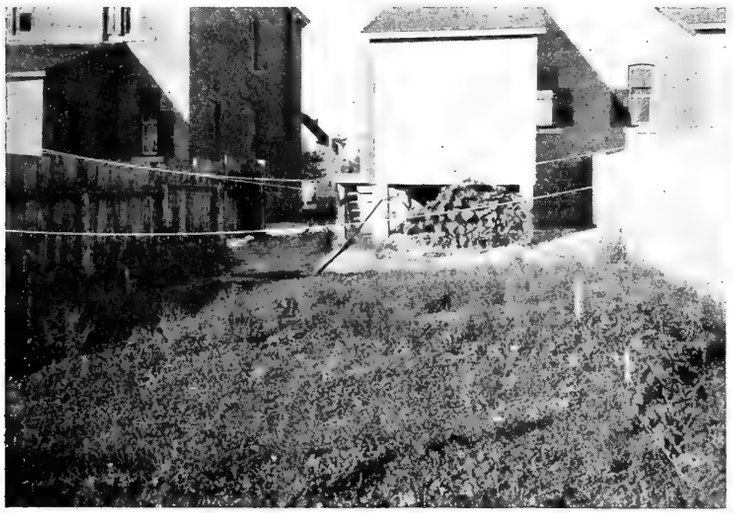
Photographs of this garden were submitted to Mr. Warren H. Manning, the landscape designer, in connection with other pictures of little gardens. Here is Mr. Manning's comment:

"I wish the Horticultural Society would give Mrs. Fenn more hardy perennials, more hardy vines and shrubs so that she could have a better all-the-year round garden instead of the midsummer and late summer garden that the pictures show. This certainly is a most instructive group of illustrations, for it shows markedly the contrast between the home where no one cares for the beauty of the growing plant and the garden of the one who cares much. It is the garden of one who enjoys plants as individuals rather than elements of landscape; the garden that is helpful to all who would cultivate plants, especially as it is developed under most unfavorable conditions. Such a woman with small means is doing more to develop a love of beauty in her city than can a rich man with a corps of gardeners who do the commonplace thing."

It is a great mistake to copy any garden, because every garden ought to fit a personality and no two persons are alike. Mrs. Fenn can grow a great variety of flowers, because she was born in England and, therefore, has gardened all her life; but the beginner ought not to try to grow 200, or 100, or even 50 kinds of flowers the first year. The more kinds you try to grow the more failures there will be. Moreover, a garden with large masses of a few kinds of flowers is generally more satisfactory to the greatest number. It makes a more striking garden effect than a collector's garden; it gives great, satisfying armfuls of flowers for house decoration; it produces better bouquets to give one's friends; and it is simpler, easier and cheaper in every way. So, I repeat, do not imitate the garden of a collector, for a beginner cannot make a garden of this kind as good as this. The only way to make a garden as good as this the first year is to make a different kind of garden that fits the life of your own family.

The ideal, of course, is for every family to have a permanent home of its own and a permanent garden of permanent plants. But every child should have a chance to grow the famous old temporary flowers that children have always loved. A packet of seed costs only five cents and the children get their results the first year. For the same reason the garden of annuals is the cheapest, quickest and best garden for the renter, for no renter wants to make expensive improvements which he cannot take away. Most rented homes in America are surrounded by bare and ugly yards. Is there any need of it? Mrs. Fenn's garden shows what can be done by a renter in a lot 23 x 120 ft., with a back yard which is only 23 x 51 ft., at an expense of perhaps $5 or $10 a year.

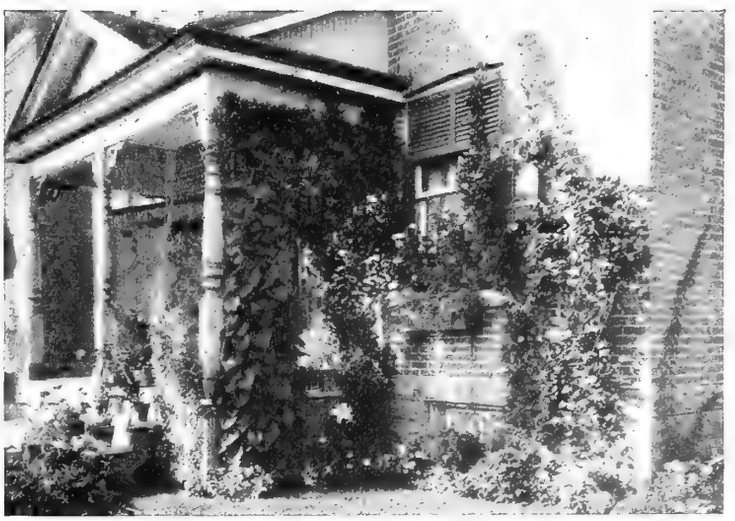
Isn't it worth while for every renter in America to have a garden? Do you make the most of your garden?



Before she began, Mrs Fenn's yard was just like this. This is a neighbor's yard and there are many more like it nearby

Mrs. Fenn's backyard is only 23 x 51 ft., and it is a rented property, but it is full of flowers

Here is a double house in Ottawa. One half of it bare — not a single vine or flower

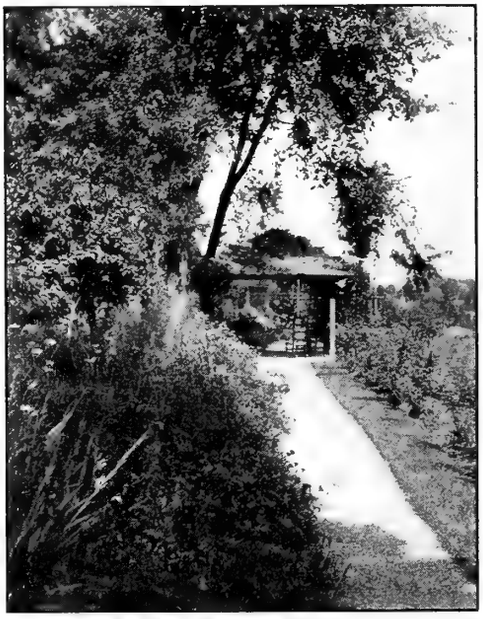


The other side (Mrs. Fenn's) has walls, window boxes, pots, and borders full of vines and flowers

A Garden That "Just Grew"—By Mrs. Grace Churchill, New York

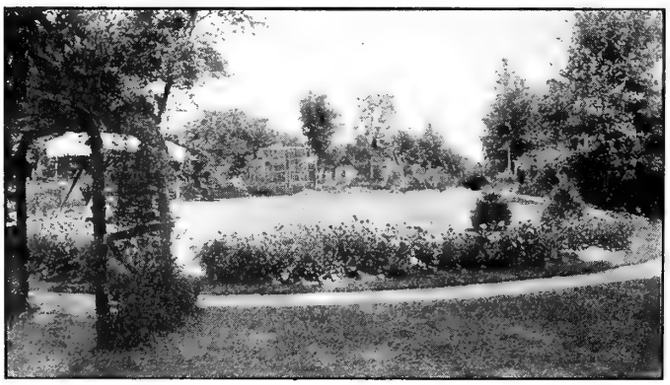
I SHALL call it a transplanted garden, because it is that and nothing else — hardly a thing is living in the place where it started. And of course everyone would know, from that statement that it is a woman's garden! I have moved hollyhocks two feet tall, large foxgloves, and shrubs and roses, very often. It is only the poppies that hang their heads and pout. But this transplanting is the secret of having a lovely garden in the short time of four years. I was fortunate in having large trees to begin with, in having a garden-man who has faith in my inspirations, and also a man who could look at pictures and from them make a summer house, a pergola, little seats, and a lattice for the Dorothy Perkins rose.

Our lot, from the house to the back fence, is about 300 feet deep by 90 feet wide, and was a wilderness. We had it cleared, plowed and leveled, not graded; it is just a good natural-looking lawn. We laid out a gravel walk around the lot, leaving an oval grass plot in the centre. There were two elms over the summer house, and here beside the gravel walk we put a long, green bench; outside of the gravel walk we planted flowers and shrubs.



This garden is only four years old

The garden did look so large and the shrubs and plants from the nurseries so small that after setting out several long and expensive lists of plants, I felt I had not made much impression. I had in mind an English garden, with its stone walls covered with ivy; but my stone walls had to be wire fences and my ivy, wild cucumber vine. I have been told many times, in my impulsive career, that patience is a virtue, but when I walked around my garden, wondering why things did not grow faster and hurry up to make the garden of my dreams, I was anything but virtuous!



Transplanting is done whenever a shift seems desirable

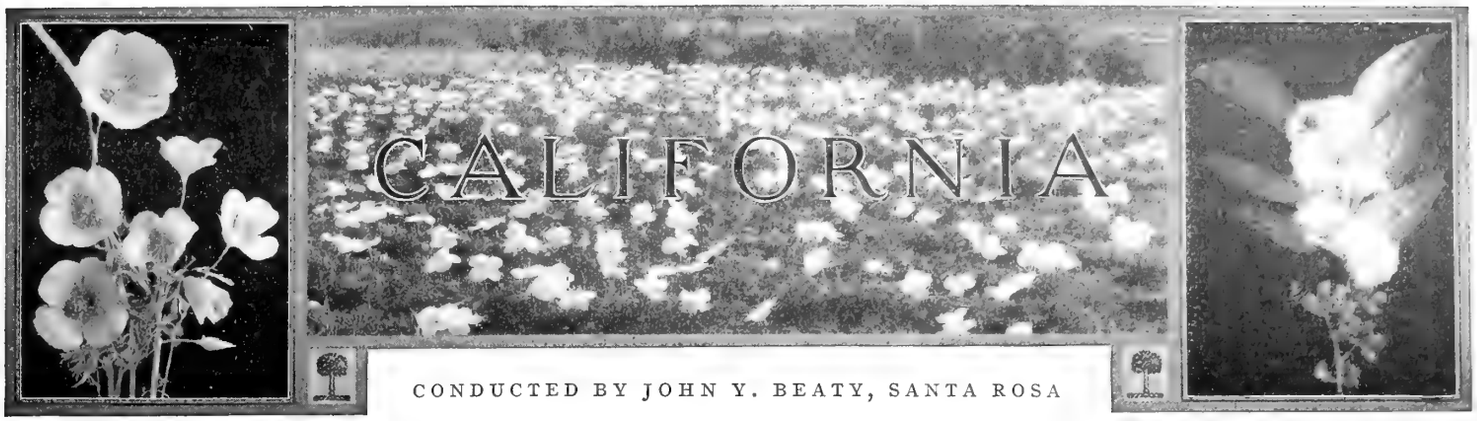
Then I had an inspiration. Why not put in large shrubs and plants! I advertised in the village newspapers for a large syringa bush, and obtained one that was to be chopped down otherwise because it occupied too much space! It was a fine clump at least twelve feet high, and did not resent being moved a bit.

Many of my neighbors have lived for years in their homes and have large old fashioned shrubs. As soon as they learned I wanted such things, with true village generosity they gave gladly. Three years ago one of them offered a large lilac bush if I would move it. My garden-man dug a large hole and filled it with water in order to have the ground very soft and wet. Then we started with spade and wheelbarrow for the lilac bush. You will understand how large it was when we found that the spade would not do and we had to use a pick to get it out of the ground. I had hoped to carry it home with plenty of earth on the roots, but to my disappointment the roots came out clean. But that did not seem to make any difference. We set the bush in the puddle of mud and water, filled it up and watered the ground all around it. The tree was in bloom but so little resented transplanting that the blossoms did not even wilt!

I also set out an old rose bush — a very old one — of the kind our grandmothers had in their gardens, with creamy petals, yellow heart and such a delightful fragrance. It was a very hot day and my man was not to be found, so my neighbor (who is eighty years old) and I decided to dig it up ourselves. We dug and dug until we were hot and tired, and then we pulled on the root until it broke. Over went my neighbor, myself, and the rose bush with half its roots broken off. It had leaves and buds on it then and I was afraid its days were numbered, but I carried it home, put its feet in water and tied it to the fence. All the leaves and buds dropped off, but before the summer was over I called my neighbor to see new leaves and small white roses on it. This same old neighbor, who has given me so many plants and such good advice, told me that my roses would do better on the other side of the garden. It was then the first of June and many were in blossom, but I met my "garden man" at five o'clock in the morning. He dug the holes and I used the hose.

Plenty of water whenever anything is worked keeps growth moving ahead

I do not like magenta and red phlox side by side, but, with floral offerings from many gardens, one is never sure what the color scheme will be. So last year, when the phlox was in blossom, I moved it to make the colors harmonize, and put white clumps between quarreling neighbors. And now my phlox and I live in peace and contentment.



CONDUCTED BY JOHN Y. BEATY, SANTA ROSA

[EDITOR'S NOTE. *We have established this new department of* THE GARDEN MAGAZINE *under the direction of a practical horticulturist who has had experience on both coasts. The climatic conditions of the western slope of the American continent are radically different from those of the whole region east of the Rocky Mountains. The two are so utterly different indeed that their floras are not interchangeable. Only a very few plants thrive equally well under both conditions. In a broad general way it may also be graphically stated thus: The plants of Europe may be taken to California and vice-versa, whereas the best additions to the Eastern region of America are those that come from China, as witness the most popular flowering shrubs of our Eastern gardens to-day. The necessity of specially treating the conditions of the Pacific slope with the coöperation of a resident of that region is evident.*]

Opportunities for September Planting

ALTHOUGH daisies may be planted practically the year around in California, I want to call your attention to them this month in particular. Burbank's Shasta daisy is without doubt the very best. It is such a profuse bloomer and bears such large flowers that it is doubtful if a daisy will ever be found to excel it.

The quickest and best way to get a start is to purchase plants. The plants are best when divided every second year and, at the time of division, a strong plant will usually make half a dozen others. The seed may be planted this month, however, if the plants are not available.

If you have plants of your own, the ideal way of improving your bed is to divide only those that produce the largest blossoms and destroy the others. Practically each plant raised from seed has a different size of blossom, but a division of any one plant will give others that will produce blossoms of equal size.

A friend has found a splendid practical use for the daisies. His garage is rather close to the road and was not a very expensive building. He could not afford a better one and it hurt his pride somewhat to have his friends see the cheap building standing out in all its boldness with nothing near to attract the eye away from it.

Two years ago, he planted a row of Shasta daisies on either side of the drive and now there is such a profusion of beautiful blossoms the summer through that people do not notice the garage because they are admiring the flowers. Moreover, the garage doesn't look so "cheap" as it did before.

If you followed the suggestions of last month (page 24), you have your bulb garden laid out and well started. September is the month to continue the planting and some of the very best flowers are to be added this month.

Put in the following bulbs: *Amaryllis belladonna* (no California home is complete without them), gladiolus, crocus, Spanish iris, ixias, narcissus, and Easter lilies.

In addition to planting the well known America gladiolus, try some of the newer varieties. Some of these are very fine in coloring and texture expecially Radio, Esthetic, Pinnacle, Elegance, and Conquest. The bulbs of these varieties are rather expensive. They will soon multiply on your own grounds, however.

Crocus bulbs are not expensive. Plant them lavishly. I prefer to set them close together with the colors mixed. One California seed company advertises them for 40 cents per 100. Buy at least a dollar's worth and set apart a place on the lawn where they will not receive too much moisture, more to prevent too rapid growth of the grass rather than to hold back the bulbs. There is nothing quite so cheering in spring as the little crocus blooms dotting a big area on the lawn, just peeping above the grass enough to cheer you as you pass.

Columbines can now be obtained in almost any color. Some varieties have particularly long spurs and are considered to be the most attractive of all. The columbine should be planted in a location where it need not be disturbed for it is a perennial and will care for itself after it once gets a good start.

Boston ivy is one of the very attractive climbers of which we have so many in California. Plant the seed this month. It has a beautiful purplish green foliage in spring which turns to the delightful autumn scarlet in fall, the time of year when we all seem to need those somber shades.

Also plant abronia, abutilon, alyssum, anagallis, argemone, Australian pea vine, or batchelor's button.

Some plant sweet peas for early blooming, but special care is required if planted this early. It is easier to get a good crop if the seeds are held until later. A few might be tried this month, however. California has so many climates that it may be that your garden is in just the locality for planting this early. If it is, you are fortunate and should take advantage of your opportunity.

See that the vegetable garden is well cultivated and thoroughly weeded. Weeds will grow with renewed vigor from now on and if you start in with a good crop, what will you expect in December? The best motto is, "A weedless garden the year around."

Unless you already have a good supply, the following vegetables may be started this month: Collards, kohlrabi, beets, brussels sprouts, winter cabbage, carrots, cauliflower, corn salad, kale, endive, lettuce, peas, parsley, parsnips, radishes, spinach, and turnips. If you have a dark cellar, try a few mushrooms. Buy the spawn grown in California if possible.

Dry the Surplus Pears

WE HAVE had so much good from our dried pears that I want to tell others how we do it and what we save. Our orchard is perhaps rather larger than the average home orchard, but the plan we use will be just as valuable to those with smaller places.

At first we sold our surplus to the cannery, but they would take only the largest and finest of the fruit. Finally we learned that we could get just as much good out of the poorer grade that was left as out of the larger specimens. We dried all of the windfalls and scabby and undersized.

Drying is a simple operation. The fruit is stemmed and cut in two once the long way. It is then spread out on trays with the cut side up. These trays are piled on top of one another and placed in a room where there is little chance of the sulphur fumes escaping — the pears must be sulphured before they are dried.

We have made a large frame over which we tack a heavy paper in drying time and use this for the sulphuring apartment. It requires about one pound of sulphur to each 25 pounds of fruit. This we usually burn in instalments. It seems to do the

work better than when the whole amount is put in at once.

The sulphuring kills certain bacteria, so 'tis said, that would make the pears rot, and they are much whiter after being sulphured, too.

After sulphuring, the fruit is laid out in the sun for two days, after which the trays are again stacked up and allowed to stand until the drying is completed. If the trays were left in the sun longer than two days, the fruit would be dark colored. If you are going to sell your dried fruit, the market will not yield you as much for discolored stock, and if you are drying it for home use, you want as good quality fruit as you would buy at the stores.

For those we sold last year we got $90 a ton. It takes about five pounds of fresh fruit to make one pound of dried fruit, so we really got about $18 a ton for the fresh fruit. We figure that it takes about $2 worth of time to cut and handle a ton.

Malita, Cal. J. M. EVANS.

Easter Lilies for June Blooming

IT WAS five years ago this September that I planted the first Easter lily bulb. We had just remodeled our house and I wanted the outside to be in keeping with the inside. I had noticed some beautiful lilies in the yard of a neighbor and found him more than willing to divide with me.

I started with one bulb, but that has multiplied until now I have a big bed on both sides of the porch. Here in California we have the great advantage of being able to grow out-of-doors what are house plants in the East. Easter lilies thrive outside even better than in the greenhouses.

Last year I counted 25 blooms on one stalk, and a more beautiful flower you never saw. The petals develop the most exquisite lustre. It seems to have more character to it than on the blooms that open inside.

I have given my bulbs no special care. The books say that you ought to transplant every year, and perhaps you should, but I have obtained the splendid result I speak of without transplanting. Of course I intended to follow the conventional methods in the beginning, but I gradually fell into the habit of leaving the bulbs in the ground the year around and the results have been more than I had expected.

September is a good month for getting a start with these lilies. I started with one, but I would certainly advise others to begin with more if possible. Then you get the full benefit from the beginning.

For cut flowers, I know of nothing better. If they are cut when the blooms first begin to open, they will last in the house for two weeks — just about as long as they last on the stems out-of-doors.

Set the bulbs rather deep, about five inches. It is usually best to throw some sand into the bottom of the hole before putting in the bulb unless your soil happens to be very loose.

Rincon Valley, Cal. Mrs. G. G. YOUKER.

Subtropical (palms for instance) and desert plants (agaves, yuccas and such like) give a striking tone to the California garden

The Garden Doctor

Part VIII.

Continued from page 19, August number

CHAPTER XV (*Continued*)

THE lettuce-border was a gay, fresh green, for whenever we wanted it for salad we pulled intervening plants so that the continuity of the border would be undisturbed; there was a row of stocky little marigolds, of prosperous looking cornflowers, poppies that had spread into a soft mat of filmy gray green foliage; buds there were, but they still held their heads down; little hard, dark red buttons of coreopsis were beginning to show. The roses hadn't done much; they were leafing out in a faint, ineffectual way. It must have been too late when I planted them. The zinnias and the marigolds had been my salvation. They could move with as much ease and alacrity as a New York family born and raised in apartments. Wherever was a gap, wherever something "had happened," wherever was barrenness or blankness from any cause, I would dig up a zinnia and it would fill the breach; or, if it didn't suit because of the color (my zinnias were all in shades of pink), then I would dig up a marigold and plant that there instead.

In spite of Mrs. Tarbox's mandate, I did make the garden more comfortable as to color. Two hills of squash had been taken by the enemy; but the third, which seemed impregnable, was making a handsome mound. So I dug up clumps of blue cornflowers and set them at the four corners, making the squash the centre, and it bid fair to look very decorative. Whenever a plant was worrying its neighbors, I dug it up and put it where it wouldn't. Of course, it's undeniably better to do this beforehand and let each begin life in precisely the right place. But if one doesn't know enough for this, what else can one do?

So now I dug some more zinnias, tucked them into lonesome-looking places in the front garden, soaked the bed and shaded it carefully.

The Reverend Richard appeared sooner than we thought.

That very evening, as we sat on our doorstep consuming our bread-and-milk, Richard appeared, framed between the smaller lilac bush and the apple-tree, as suddenly as if a curtain had been raised. There he was — clericals, hat and stick, the lock of hair falling over on his spectacles' rim, just as it did the last time I had seen him, three years before. The immaculate black of his trousers was dusty and his square toed shoes also bore traces of the Enderby river road. Evidently he had walked up from the station. He pulled out an immaculate handkerchief and wiped his forehead.

"I am looking — " he began doubtfully; then he stopped abruptly — "My word but you're gotten well!" he said, and he looked at me with sudden interest and at Clarky with genuine admiration.

Clarky certainly had grown good to look upon these days. Her cheeks had tanned until they were the color of apricots; she wore a white blouse, as she always did, open at the throat, which showed the lovely line of neck and chin, and her hair was in two thick braids like an Indian squaw's. I liked to look at her myself, and I didn't wonder that Richard's eye lightened as he saw her framed in the doorway. Presently she vanished, reappearing a moment later with a refilled pitcher and another bowl.

Richard fetched a bench from below the lilac bush, and we resumed our repast.

Richard beamed at the landscape; then he beamed at us; he said it was as lovely a spot as one would wish to find this side of Paradise. Then he told us the town news, which somehow seemed a bit irrelevant, as we listened to the thrushes and consumed the childish supper.

"What does this make you think of, Richard?" I asked after a pause.

"Pilgrim, refreshed at the house of Mercy?" he inquired.

"Farther back — six-year-old reading."

He looked at the house, at us, at the little table and the three bowls of varying sizes, then laughed a boy-like and unclerical chuckle. "The 'Three Bears'?" he said.

Clarky was right about Richard.

He liked it. He stayed until I began to fear he would break his neck or at least his spectacles in finding his way down the hill, for there was a blind turn you take and an unwary step would send you crashing violently down a steep place like the wicked stepmother in the fairy-tale. I had to lend him our one little lantern. He was staying the night at Mrs. Tarbox's; he purposed prospecting on our hill for sites for apple and nut orchards. He would come tomorrow and "spy out the land," he said.

CHAPTER XVI

RICHARD, as I said, liked it. He stayed by the doorstep that first evening watching the sky and listening to the thrushes until they stopped singing and the dusk fell and the crickets began their steadily insistent "Go *in!* Go *in!* Go *in!*" which ought to have sent him down the hill to Mrs. Tarbox's. But it didn't.

Instead, he came indoors to our crackling wood fire which made the hemlock branches cast queer, flickering shadows on the walls, and flashed from his large lensed spectacles. He sat on the floor by the fire, regardless of his clericals, long arms clasped about his knees and told us his plans, also the theories which were responsible for the plans.

I took the invalid's privilege of the window seat and cushions for I was tired. Clarky sat opposite Richard on the other side of the fireplace, her back toward me, but her back looked interested. She leaned forward, chin on her hand, and listened as if it were a medical lecture and she were taking notes.

Richard was terribly in earnest. He always was over his theories. He talked farming conditions to Clarky as if her soul's salvation depended upon his getting his idea "across to her," as the playwrights say.

At last I woke up to what he was saying. "Here?" I broke in. "A pastorate up here?"

"Precisely," he answered, turning the gleaming spectacles upon me. "The most important problem in the country is the industrial problem; the only part of this I understand is where it touches agriculture. Therefore it behooves me to establish myself where the problem is agricultural. Nowhere is the agricultural problem in sorer need of intelligent solution than in New England."

"But the salary, Richard! There are plenty of anaemic and paralytic churches. There's a brick one over the hill, really good architecture and an old orchard beside, and the country may be good for fruit raising, but the salary! Four or five hundred a year — something like that, Mrs. Tarbox told me — no one could possibly live on that!"

"But there's the interesting part, my dear Caroline," said Richard mildly, "I shall then have precisely the problem the farmers of the neighborhood face without the aid of that stipend. It will be enlightening to find if one is adequate."

Then he expounded his theory. He said the idea of a clergyman insulated from the problems of the community was unsocialistic, undemocratic, it was also unapostolic;

he held it a man's duty, especially nowadays, to lead his flock economically as well as spiritually into green pastures; that he should assist his people to live rather than live off them.

"Nowhere is better farming more necessary than in New England — for lack of it the farmers' children go cityward and his kingdom is taken from him by the summer resident and the man from outside who knows how to farm better.

"It is well enough to have ancestors who came over in the *Mayflower*," said Richard, "and the distance from which we view them undoubtedly enhances their worth, but farming methods should be more recent. Surely three hundred years is sufficient time for people to discover that their climate conditions are not those of Great Britain; that here is not England's watery sky; that drought in the summer may be counted on almost as certainly as flowers in the spring, and that it would be well to make some provision for it aside from praying for rain. New England farming is archaic."

"There's plenty of modern machinery," said Clarky.

"Yes, but look at it, my dear Miss Clarke. Left out in the rain and dew — treatment which might have been accorded harmlessly to the wooden Egyptian plow of Moses's time, but which is deadly to iron and steel mechanism.

"The Pilgrim Father was a worthy soul," continued Mr. Protheroe, "but he robbed the land just as he robbed the Indian. 'The Earth is the Lord's and the fulness thereof,' was his idea, and moreover that the Lord had delivered it into his hand, wherefore he may take all and give nothing back. His descendant does precisely the same thing — wastes the fertilizer, wastes the resources of the land, wastes the digestion of his boys and girls, wastes the strength of his cattle. Father and son for two hundred and fifty years will be content to lose ten years from the life of every horse on the farm rather than to change a road and give an easy grade instead of one which puts a terrific strain on the animals.

"It is not economy the farmer has, my dear Miss Clarke, not economy, but congestion of the purse strings! No wonder he and Mother Nature clash, as you say your friend here tells you. His policy is one of devastation, conquest and not coöperation, and the bare, scraped hills are witness to it.

"It is socialism that farming needs," said Richard, warming to his pet subject, "socialism and Montessori methods of education. Coöperation rather than conquest. Since the character of the land is varied, the crops should suit the diverse abilities of the soil, a kind of vocational training should be followed. Thus we have from Madame Nature coöperation and assistance rather than enmity." He quoted Saint Paul to the effect that on a farm all parts are "members one of another, but all members have not the same office."

"Why force it on them?" said he.

"When trees are so gifted by Nature," said he, "that their roots can force their way through the rocks down to the cool moist soil below — why should we painfully and laboriously remove the rock for them and teach the roots to come near the surface so that in summer watering becomes a necessity, although at that season the streams run dry?"

There was, in his mind, no reason why our bare hills might not be covered with prosperous apple and cherry and nut orchard as the Italian hills are covered with the olive trees. His intention, it seemed, was to establish nut orchards and to get a small piece of land into a very high state of cultivation instead of having a large area indifferently productive.

He considered the whole problem of the hill country an agricultural problem. He bade us remember that the undoubtedly familiar story of the Exodus was the account of an exploited people leaving an exploited industry and betaking themselves to country life and farming, each on his own holding, in the Land of Canaan.

Thus and much more, Mr. Protheroe; I grew tired and listened rather absently, but Clarky sat enthralled. It fitted so admirably with her own ideas which always makes any one's discourse more interesting. Clarky held the unflattering belief that all bodily ills came from being more or less of a fool in the ordering of one's life, and omitting three square meals a day.

She told me afterward, as she was helping me to bed (for she still kept the nurse's habit in that respect) that it was perfectly simple; that what ailed the farms was, as she made out from Richard's discourse, a kind of nervous exhaustion — overwork, lack of nourishment, no diversion — always the same kind of work and a possibly distasteful occupation at that. She understood it perfectly and thought it very interesting.

"There's quite a bit in his theory," said she, "and I agree with him that the chief causes of rural decadence are the country minister and the country school. These teachers who should lead are followers, and followers a long way behind."

"You have a good memory for the Rev. Richard's remarks, Clarky," I said, "but there's nothing new in his theory."

"The willingness to try it out is new," said she.

"But how can he have time for study if he carries out all these lovely farming experiments?"

"Study!" said Clarky, "When you study defective physical and sanitary conditions you go where they are and experience them, or you go to a hospital and see the people who are ill from them. You experiment and prove, or your theory is no good. He is simply for trying out his social and religious theory. It's perfectly intelligent, perfectly scientific — a bully idea."

CHAPTER XVII

NEXT morning, I was sitting on the doorstep having my early coffee — the one dissipation our hill afforded — when Richard appeared. It was not yet seven. Evidently the climate had something the same effect on the Rev. Richard that it had had on Clarky. Instead of clericals he was all in khaki — very new — with canvas leggings — also new — and a soft hat something like Stephen's might once have been. In his hand was a Delft blue dinner-pail.

"Where's Miss Clarke?" said he.

He carefully set down the dinner-pail on the step that Mrs. Tarbox's pie, which I knew it contained, might not be jarred. Then he sat down beside me.

"Where's Miss Clarke?" he repeated.

"Off to the farm, for extra milk," I said. "She won't be back for nearly three-quarters of an hour. Have some of my coffee?"

Richard went inside and found a cup with more skill and expedition than I thought he had and sat down beside me again. The mist still lay in the valley although the top of the mountain was clear. Old Ascutney looked as if he had pulled the fleecy blanket up to his chin, and intended taking another nap.

"How long have you been doing this," asked he, "keeping these very sprightly hours?"

"Coffee on the doorstep? More than a month."

"You've been getting wonderfully well," said he. "How has it been accomplished?"

"Digging in the ground," I answered.

"Back to the soil very literally?"

I nodded and then set down my cup. "Yes, it's the garden," I said, slowly, "though I daresay you think it doesn't look like much, but I never did it myself before. There's something wonderfully soothing in having your fingers in Mother Earth. It seems to take the restlessness out of one. Then, you know, when I've tried to get well before, the only way was to go about, to get properly dressed and walk a bit, and it was all dreadfully exhausting, deadly uninteresting. But to lie on a rug in the sunshine and poke in the ground with weeder or trowel or fingers, wasn't in the least tiring, it was wonderfully exciting. And the moment I cared to I could rest just where I was — pull the pillow under my head and watch the birds. I suppose it's the way a baby begins — creeps and does things and then drops his toy as soon as he's tired. And then when I tried to walk, I found I'd been growing some muscle in my back and that it felt no longer like a wet string. There was real muscle in it. You won't believe me, but I helped Clarky put those stones in place and make the wall before I'd walked as far as the barn. Oh yes, it was the gardening. That, and Stephen McLeod."

"Who's Stephen McLeod?"

(To be continued)

Stored for winter. The boards are covered by earth

Paper wrapped around the plant is effective

Blanching with tile has the advantage of cleanliness

The Blanching of Celery – By Stephen N. Green, Ohio

THREE METHODS BY WHICH YOUR GARDEN CROP MAY EQUAL, IF NOT EXCEL, THE USUAL MARKET PRODUCT

THE celery now growing in the garden needs blanching before it is really fit to eat. Green celery will do well enough for the kitchen but for the table blanched stalks are necessary. Now, it is not a difficult task to accomplish, but it needs care.

The process consists in destroying or preventing the formation of green coloring matter in the heart and stems. This is accomplished by taking away all light. Celery makes considerable growth in cool weather and after the plants have been darkened they will gain much in length and weight. Indeed, such growth is desirable to produce crisp celery and the most common mistake that is made is to wait too long before commencing to blanch. Usually the plants are ready when they have reached a height of from twelve to fifteen inches, generally in October or about ninety days after transplanting.

The most satisfactory and usually the best way to blanch is to bank up the soil against the row. Be very careful not to allow the earth to get into the heart of the plant as it will usually destroy its market value. This may be avoided by tying up the stem just before banking, using a common soft twine. Begin at one end of the row, using the first plant as an anchor, gather the stems of the next plant together, and wrap the twine once around, then proceed to the next plant without cutting the string, and at the last one again tie firmly. However, by a little care the earth may be banked against the plants if they are first compacted together with one hand as the other places the soil; but it is generally necessary to build up the bank by degrees, taking more time than if string was used. The bank should be built up high enough to reach to the leaves of the plant, and built up as required to completely shade the plant until it is entirely blanched. Never work with wet soil as it seems to cause a rust of the stems.

When ordinary 4-inch unglazed drain tile are available they may be used as a very satisfactory substitute for the earth bank. Simply slip a tile over each plant and allow it to remain until the celery is ready to cut. Celery blanched in tile is always clean and of the best flavor.

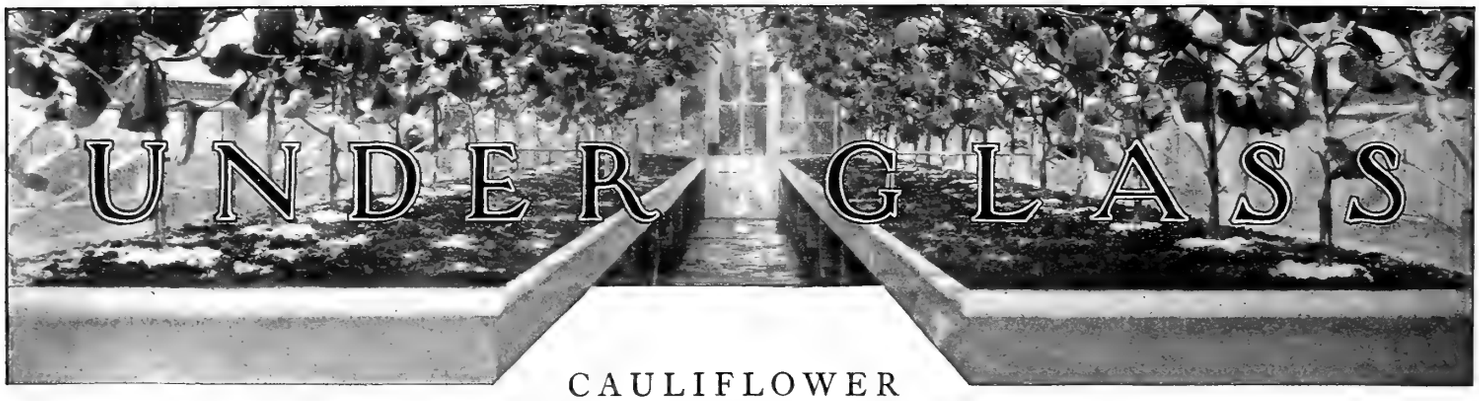
Boards are often used for blanching early celery, and they can be used for late crops when the varieties are of the self-blanching types that require less complete darkness, or for partial blanching of the large growing late sorts. Use boards twelve to fifteen inches wide, fifteen feet long, and one inch thick and of a cheap grade of lumber. Place them against the rows of celery and hold them in place by clamps or stakes. Paper wrapped around each plant will often answer the purpose when no better method is possible, and in many small gardens it is the easiest way.

It takes from four to six weeks to completely blanch the average celery plant, and the colder the weather the longer it takes. When freezing weather threatens, some protection is needed if the plants are to be left in the ground. The tops and stems are not injured by a frost but freezing will soon spoil them. Temporary coverings of straw, corn stalks, etc., will often tide over short cold spells.

If you have a cool, clean dry cellar the celery may be stored in that when completely or partly blanched. Leave a little earth on the roots when digging and pack the plants loosely together on the floor. However, it is rarely advisable to store celery in the average cellar as it is too warm and if it is not perfectly clean, the flavor of the celery is soon ruined

The most satisfactory method of storing on a small scale is to dig a shallow trench in a sheltered, well drained spot, setting the celery close together, banking as for blanching but using straw to line and cover such a pit. Ample ventilation should be given the first few days that the celery is placed in these pits, but cover with straw deeply enough to keep it from freezing and so shed rain. Cover the entire pit with earth. Celery treated that way should keep until very late winter.

For winter pack the roots closely together, in frame, cellar, or bench and cover to exclude frost



CAULIFLOWER

AN UNUSUAL AND VERY PROFITABLE DELICACY — CAN BE GROWN AS A CATCH CROP IN A GENERAL PURPOSE HOUSE

WHY isn't cauliflower profitable for your own greenhouse? In a small greenhouse on Long Island one family raises for home consumption what might be called "miniature cauliflower," cutting the heads when about two inches in diameter and serving them as individual portions instead of in the ordinary vegetable dish. But — and this is *the* point — this same family was offered, by a prominent retail produce dealer, eighteen dollars a dozen for all such heads that they could supply during the winter months!

Most out-of-season luxuries of this type, such as European grapes, winter strawberries, "hothouse lambs," etc., involve considerable extra care and expense. Here is where the "miniature cauliflower" makes its greatest appeal. It is actually easier to raise than the ordinary, indoor crop which is brought to maturity and sold for an ordinary price. Less space is needed because the heads are not allowed to expand and can be grown from six to nine inches apart. No tying up of leaves and blanching is required, as the head is cut before the inner leaves unfold and expose the inflorescence to the light. Nothing special in the way of benches is necessary, for not more than six inches of soil is desired — the shallow bed promotes rapid, tender growth. The soil need not be of special richness, for a loose, light medium is also conducive to quick growth; whatever feeding is called for can be done with liquid fertilizer. Finally the time required by the crop is relatively short and permits increased utilization of the bench space.

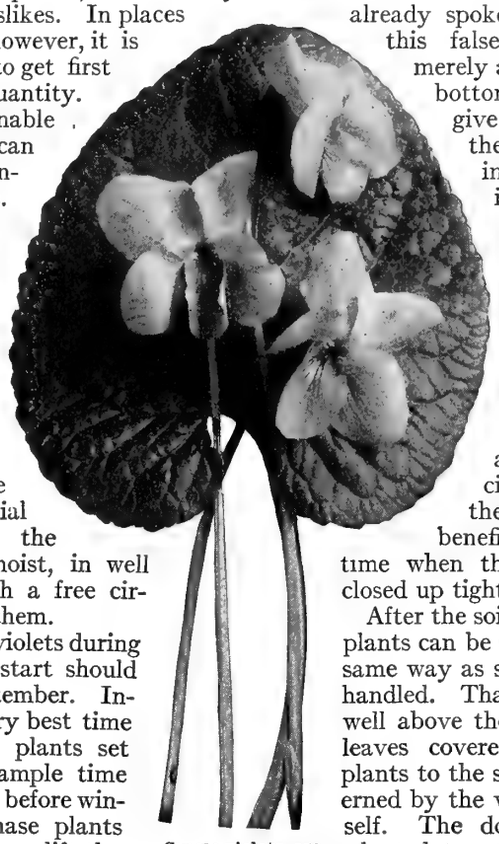
As with the standard greenhouse crop, the seed may be sown in August or September, either directly in the benches or in a coldframe or seedbed outdoors. To obviate all possibility of a check, young plants should be brought in, or at least be given ample protection, before severe weather arrives. Rather generous moisture, abundant feeding with liquid manure, and a rather low temperature when in the house are the special needs of cauliflower. Plenty of ventilation will usually bring the seedlings safely through the "damping-off" period, and ordinary conscientious care should prevent insect injury or attacks of plant diseases.

Of course the finished product must be marketed in the neatest, most attractive manner possible. Its nature, as a "luxury de luxe," requires this and its value justifies it. But then, even if you don't expect to sell "individual cauliflowers," wouldn't you enjoy surprising your friends with them at some little dinner party? If you have a greenhouse — even the smallest of greenhouses — why not try a few?

Miniature cauliflowers may be raised in the greenhouse from seed sown in early September

Growing Violets in Coldframes — By Henry Wild, Connecticut

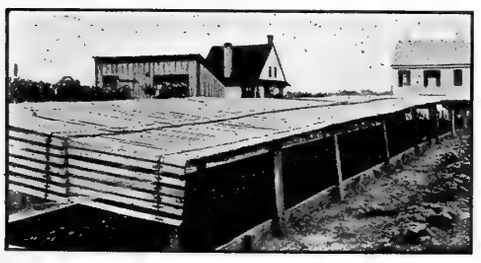
THE violet, when all is said and done, is a somewhat difficult plant to handle. It does not do equally well in all places; it has very marked likes and dislikes. In places where it will grow, however, it is really no trick at all to get first class flowers in quantity. Elsewhere, a reasonable amount of success can be had by close attention to cultural details. The best success is had under greenhouse management; but all of us do not have greenhouses and with coldframes many large commercial growers have been highly successful, so there is real encouragement for the amateur. The essential things are to keep the plants cool, fairly moist, in well drained soil and with a free circulation of air about them.



Single violets are stronger growers than doubles and have a richer color

If you would have violets during the coming winter, a start should be made early in September. Indeed, that is the very best time for planting because plants set out now will have ample time to become established before winter. You can purchase plants from a florist or you can lift the current season's plants that have been growing outdoors during the summer. More than with most other plants the exact kind of soil is important. The ideal is a good strong loam and well rotted barnyard manure, three parts to one, stacked the previous spring and chopped down now. If such a stack has been turned twice during the summer so much the better. When growing in frames this compost had best be put in over a layer of half decayed roots or rough straw in order to ensure drainage.

Make the frame 2½ feet deep and 6½ wide, and adjust it to take the regulation 3 x 6 sash. Or you can buy frames already made and some of the greenhouse builders nowadays offer a smaller sized frame especially for ladies who wish to do their own garden work. If you are making your own frame, have a false bottom to the bed 14 inches below the glass in front and 16 inches at the back. The drainage material already spoken of is placed over this false bottom, which is merely a layer of boards. The bottom boards, in order to give drainage, are laid on the ground with a half inch space between. An interior frame of five-inch boards can then be nailed to the uprights, usually made of 2 x 4. This interior frame will hold the soil and allow a 2-inch air space between itself and the frame proper. This arrangement ensures a circulation of air around the plants which is very beneficial during the winter time when the frame has to be closed up tight.



Shading the frames after planting is an important detail

After the soil is in and settled, the plants can be set out in exactly the same way as strawberry plants are handled. That is, with the crown well above the soil and none of the leaves covered. The number of plants to the standard sash is governed by the vigor of the plant itself. The double violets can be planted twenty-eight to the sash, in seven rows of four each. The same space will only accommodate eighteen plants of the single varieties which are heavier growers.

Whether the plants be received from a dealer or taken up from the ground, they must be properly trimmed before being set out, cutting off poor leaves and all runners. After setting be sure to make the soil firm around the plants, give a thoroughly good watering and if the day be warm leave the glass on and further shade the frame with a lath screen or plant cloth. At night the glass sash can be removed — say as soon as the sun goes down. Keeping violets too warm at this stage is a potent cause of failure. The cool conditions of night during the early fall will do wonders in putting strength into the new plants and the foliage should be quite firm in the morning when the glass is replaced and the frames covered again. As necessary the soil must be stirred but do not water again until it has become visibly dry, the whole object being to establish a sturdy, resistant plant. The sash can be left open at night until light frosts come which will check excessive leaf growth. During bright, sunshiny days after planting air can be admitted by raising the sash and aim as near as possible to maintain a temperature of 45 to 50 during bright days and 40 or one or two degrees lower at night throughout the winter.

It is important, too, that the foliage be dry before the frames are closed, therefore, watering must be done in the morning, and it will pay to be careful about applying water to the soil between the plants and not over the plants themselves. Use a watering can and do the work slowly. Under this routine flowers will begin to develop during early winter and the crop will continue through spring up to March when the plants can be thrown out and discarded or new runners may be propagated for planting out the following September.

If runners are to be taken, they should be removed the first of April, selecting only the strong and healthy growths. For propagating the plants should be removed from the old frame, the soil forked over, and a top dressing of about two inches of a screened mixture of loam, leafmold and sand placed on the top. This makes an ideal rooting medium. The young plants are removed from the runners by a clean cut and can be reset in the frame in twenty-four rows and twelve plants to the row across the frame. They must be shaded and watered every day until rooted.

My experience has been that plants propagated in light compost rather than pure sand are more sturdy. They can also be taken right from the frame to be placed outdoors where they are to remain all summer, and a ball of soil being taken with each plant there is very little check in transplanting. If sand is used for the propagating bed, closer attention is necessary in both watering and shading, and it is easy for the plants to become weak and "drawn." For the amateur the first method is distinctly advantageous because it does away entirely with the process of potting off or transplanting before planting outside. The old growth had best be discarded, using only the young new growths for propagation. The older plants have a tendency to make suckers and are

Planted in beds in frame or greenhouse during September, flowers should be cut all winter

not nearly so good for fall planting as the smaller ones would be.

The young stock propagated in April will be ready to plant out in May and will require a space of fifteen inches between plants in rows eighteen inches apart. From that time on, weeds must be kept under control by cultivating the soil which will also help to conserve moisture.

During the summer cut off all runners as they appear. In other words, try what the strawberry growers call "hill culture." Aim to build up a good crown and not a straggling plant. The flowers that are to be produced in the winter are made in the crown during the summer.

The violet grower is liable to suffer from one insidious disease — leaf spot. Double violets are especially liable. It appears in the early fall and it is especially prone to develop on plants that have been grown in rich soil or over-watered during the summer. A sturdy, vigorous growth, observing the rules for proper watering, and having adequate drainage so that the soil will not become sour are the practical precautions. The air space around the bed in the frame is a help, too.

In the early spring, in common with other plants, green fly is liable to make an attack. Some of the oil or soap or tobacco preparations are effective remedies. I have used soap, one half pound to eighteen gallons of water, which would also be effective against red spider, although that little pest does not usually bother violets in frames.

VARIETIES TO GROW

Marie Louise and Lady Hume Campbell are both fine doubles, the former being darker in color, and the variety most generally grown; the latter, however is a good violet and some growers claim that it has the advantage of a longer flower stem. I have tried both under the same conditions and prefer Marie Louise.

Among the single varieties Princess of Wales is the leader, having a long stem, fine color, and very free flowering, a combination that is all that can be desired.

Should violets be required as late as possible, try a few sashes of Princess of Wales and allow them to remain frozen all winter. These need not be planted before late October, so the frames can be used for other things till that time. Let them grow along until December so as to be well rooted, and then let them freeze. Keep a mat and shutter on the glass to exclude the sun and allow the frost to come out gradually in early spring. You will be surprised at the wealth of flowers obtained in this manner, after the plants grown under ordinary conditions are over. I have left plants of Princess of Wales in the field all winter without any covering, and they have come through all right and flowered in late April. This demonstrates the hardiness of this variety.

Growing Roses from Slips

IN THIS locality growing roses from slips is generally practised and is, as a rule, successful. The usual way is to stick the cutting in the ground in common garden soil and cover it with a glass fruit jar inverted and pressed into the earth sufficiently to exclude the air.

The best time to start the slips or cuttings is probably in August, after the first bloom is over, or even in September. I have some which were put out in the early fall. I sometimes strip the twig from the branch to which it is attached and stick that end in; or a branch may be cut diagonally just below an eye. Put this under ground to the depth of an inch or two and leave one, two, or more eyes above. I cut off all the leaves except one at the top. The jar should be left undisturbed through the winter. A few of my cuttings came safely through the winter of 1911-12 which proved fatal to many shrubs and vines, the mercury falling once or twice to 25 below zero. These roses, two red ones and a pink daily, grew to the height of 23 and 32 inches respectively, bloomed throughout the summer and until it became too cold for the buds to develop. On the very last day of December, they still retained their buds and foliage.

Years ago I used another method with good results. The cuttings were put in a bottle of water which was kept in a sunny place until little white points showed around the edge, indicating that the roots were ready to appear. They were then planted in a pot.

When growing roses from slips in the way first mentioned, if the season is dry keep the soil moist, and a light mulch will prevent its baking. If not placed where they are to grow, transplant in the spring.

Maryland. S. E. G.

Personalities of Some Roses

THE oldest rose on our premises is a General Jacqueminot, a gift to my mother nearly thirty years ago. It was moved about from place to place in a 6-quart tin pail, for about five years. At one time in those quarters it had nineteen blossoms on it. For twenty-five years it has stood on the north side of our house, has had a moderate amount of sun, some old manure annually and plenty of water, not a great deal of attention otherwise, and has produced annually a good crop of fine flowers

The hard winter killed all the roses we had, some sixty-five in about fifty varieties (except the Crimson Ramblers, Baltimore Belle, Prairie Queen, Damask, Centifolia and Mrs. Chas. Wood) to within, at most, six inches of the ground.

So all the roses in the garden were cut back and glass fruit jars inverted over the stubs or as much of them as the jar would cover. Just two died, Baroness Rothschild and Etoile de France.

Surviving are the following, thirty in all, and those marked * bloomed also, from the new wood:

*Pink Moss; *Gen. Jacqueminot; Roger Lamberlin; Gloire Lyonnaise; *Coquette des Alpes; *Clio; *Magna Charta; Margaret Dickson; *Alfred Colomb; *American Beauty; *Countess of Rosebery; *Paul Neyron; *Ulrich Brunner; *Dinsmore; *Mrs. R. G. Sharman Crawford; Coquette des Blanches; Kaiserin Augusta Victoria; *Hermosa; *Clothilde Soupert; *Duchesse de Brabant; *Burbank; *Etoile de Lyon; *Baby Rambler; *Maman Cochet; *Helen Gould; *Meteor; *Richmond; *Killarney; Frau Karl Druschki; Ball of Snow.

Gloire Lyonnaise is an almost perpetual disappointment as it invariably kills to the ground, with the result that there are no roses.

Our soil here is a heavy, black loam with clay and manure added. The garden lies at the foot of a southern slope, and is shielded on west, east and north by either trees or buildings.

Every fall the Hybrid Perpetuals, a good many of which I have grown from cuttings, are given a mulch of old manure, but the Teas and Hybrid Teas have a slight covering of straw. The very smallest Teas I cut back and cover with a glass fruit jar. In the spring, if any have killed back badly, they are cut back as far as necessary and "canned" as above, and some of even the Teas and Hybrid Teas are now at least ten years old. The bed is thoroughly hoed when the winter mulch has been removed, and the bushes sprayed as needed with Bordeaux, arsenate of lead or clear water and the ground occasionally loosened with a hoe.

Indiana. JANE GREEN.

Harvesting The Backyard Garden — By Roger W. Babson, Massachusetts

[EDITORS' NOTE: — *This is the sixth and concluding article in Mr. Babson's series, which began in the April number, in which the economic value of the backyard in relation to the "Cost of Living" problem is discussed.*]

IN MY second article I showed the profits received from my garden during the past summer, which profits amounted to about $50. As this garden was located at my summer home, we simply planted and planned on what the family would eat during the summer. All surpus vegetables we gave away or else left to ripen on the ground after leaving. A man who has his garden at his winter home, however, can have a large surplus for winter use with little extra cost.

With a large tract of land, he can raise enough potatoes to carry his family through the winter — that is to say, three or four barrels which are worth around three dollars per barrel; also one or two barrels of cabbages worth a couple of dollars per barrel; also two or three barrels of squashes worth several dollars per barrel, and various other so-called winter vegetables. Splendid results can be obtained from celery which can be banked with earth just before frost time and either kept out-of-doors or in the cellar, until well into the winter. In fact, I have neighbors who have celery way into January.

As it is necessary for me to travel continuously beginning with the fall, I plant only what I personally can take care of as a matter of recreation. I have avoided planting vegetables which require excessive care as well as avoiding an excessive quantity which would make the garden *work* instead of *recreation*. What I have done can be followed by a million other men, who are wasting this opportunity. Therefore, as above stated, I have not attempted to raise any vegetables for winter use; although if I had, the profits of the garden could have been nearly doubled without much more work. In fact, after the first of August the garden was practically no care whatever, and during the last four weeks I did not lift a hand to it; as even the collecting of the vegetables was performed by members of my household.

The value of a cellar full of winter vegetables is so well appreciated, however, that telling about them is not the purpose of this article. Instead, I wish to speak about preserving, canning and pickling as a means of reducing the cost of living through the backyard garden. If you will remember when a boy your mother "put up" preserves as she called it, buying peaches and other fruits at wholesale and preserving them by cooking and placing in air tight glass jars. When September came, mother commenced her pickling, using cucumbers, green tomatoes and other left-overs from the garden and making pickles thereof. If your mother came from an especially frugal part of the country, she also preserved certain vegetables, such as string beans, beets, etc. Preserving of vegetables, is especially common among families of hardy French descent.

In the first article of this series, I stated that the increased cost of living is primarily due to two factors; first, decreased production and, secondly, increased waste. I showed that during the past ten years our population has increased more than 20 per cent., and our production of leading foodstuffs less than 2 per cent.; while less than 5 per cent. additional land has been placed under cultivation. In short, the production per capita is continually decreasing. This is primarily the cause of the increased cost of living. This is closely followed by the second, namely, the lack of economy, for as production has decreased, waste has increased. Not only do our families produce less than the families of our ancestors; but we waste very much more.

One of the greatest curses of American civilization to-day is the fact that it is unfashionable to save and that the people are ashamed to save; while extravagance, waste, and carelessness are looked upon as smart and signs of prosperity. Now probably this can in no other way be more distinctly shown than by the fact that our wives are not doing the preserving and pickling that our mothers used to do. The very fact that great manufacturing firms producing pickles, canned goods, soups, etc., have thrived so during the past ten years proves this point. These great factories with their "fifty-seven varieties" are thriving on the laziness and unproductiveness of our wives and sisters. They could not have existed in the days of our mothers, who insisted on doing their own preserving and making their pickles; but our wives and children are too lazy to do these things and our maids do not know enough. Therefore, in solving this increased cost of living problem, we not only must produce more, but we must save more; not only raise more vegetables, but save more vegetables for winter use.

Probably the most profitable and useful vegetable to raise for winter use is the tomato. Some day the tomato will be recognized. As yet, it has never been fully appreciated. To begin with, the tomato is very easy to raise. Then again, the plant can be used as a hedge, both for practical and decorative purposes. A hedge of tomatoes presents a beautiful background of green with yellow flowers during the early summer, which later turn to beautiful red tomatoes. During the summer the tomatoes will mature as wanted for table use; but on the night before the first frost all should be picked. I usually pick several bushels from my vines on that night. These I divide into three lots; first, those that are ripe and ready to be eaten, which are preserved, as I will explain later; secondly, those which are green but are ripening, and which I place in my cellar to be brought out as they are desired, allowing them to ripen gradually. (A tomato goes through the same process of ripening as does a banana and other foreign fruit which is picked green and allowed to ripen during transportation, thus being ready to eat when arriving in this country. An average person thinks that tomatoes must ripen on the vines, but there is no more need of this than for bananas or other tropical fruits. Yes, up to Thanksgiving we have had raw sliced tomatoes on our table, although these tomatoes had been picked two months before.) There, however, is a third lot which are too green to ripen, and these are made into pickles after my family has stewed and put in glass jars the excess of ripe tomatoes which could not be kept.

Now, just notice what comes from the tomato plant; first, we have a fine hedge, suitable for decorative purposes, next, we have raw sliced tomatoes during the summer and through the dark ripening process, up to November; next, we have stewed tomatoes which are prepared by a very simple process, it being possible to put up several dozen jars in half a day which can be opened as required during the entire winter. Too ripe tomatoes can in addition be used for making ketchup, and what your wife makes I'll guarantee will be much better than what you buy in bottles! Probably the average family spends at least $2 or $3 a year on ketchup, all of which can be saved if this work is done by your wife. But this is not all; in my opinion the finest pickle of all is made from green tomatoes, both sour and sweet pickles. The famous "piccalilli" "which mother used to make" was made from green tomatoes which were too green to ripen when frost came. For you readers who were not brought up in the country, let me give some of the simple rules for making these delightful relishes from the surplus of the backyard garden.

PICCALILLI

Slice 1 pk. green tomatoes, 6 large onions, and sprinkle with salt and let stand over night.

After draining, chop and boil in 1 qt. of water for 15 minutes. Drain again, throwing away the liquid.

Then add

3 lbs. brown sugar	Ground ginger
2 qts. vinegar	Ground cassia
1 dessert spoon each:	Ground clove
Ground allspice	Celery seed
Mustard seed	½ teaspoon Cayenne

Boil 30 minutes or until soft. Bottle when cold.

LEMON TOMATO

10 lbs. of tomatoes
7 lbs. sugar.
6 lemons

Pare the tomatoes and slice into kettle. Remove all the yellow from the lemons by slicing off very thinly, then slice lemons and add both rind and lemon to tomatoes and add sugar. Let cook slowly for hours until it is thick like jam. Seal in jars while hot.

SPICED TOMATOES

3 lbs. ripe tomatoes peeled and sliced.
1 pt. vinegar, 1 qt. sugar and spices to taste.

Boil down until it is of the consistence of jam. Very fine with cold meats.

CHILI SAUCE

9 large ripe tomatoes	1 teaspoon each of
2 onions	allspice
1 green pepper	cloves
½ cup sugar	mustard
1 cup vinegar	
1 tablespoon salt	

Skin tomatoes, chop all together and simmer one hour, placing in jars or bottles and seal while hot.

RIPE TOMATO KETCHUP (cold)

As ripe tomato ketchup is not a good "keeper," it is best to make it in small quantities. If kept in a cool place, it will last, however, until about the first of February.

Peel and chop coarsely ½ peck solid ripe tomatoes. Turn into an enameled collander and let drain while chopping 3 large onions, a small bunch of celery and 3 green peppers. Mix these and add 1 cup of sugar, ½ cup salt, ½ teacupful each of nasturtium seeds and white mustard seed.

One teaspoonful each of ground black pepper, mace and cinnamon. Pour 1 qt. of cider vinegar over the mixture. Stir well and fill into wide mouthed bottles. Cork tightly.

COOKED TOMATO CATSUP

1 bu. ripe tomatoes	1½ oz. allspice
½ gal. vinegar	2 oz. mustard
½ lb. sugar	1 oz. ginger
½ pt. salt	½ oz. cloves
1½ oz. black pepper	⅛ oz. cayenne

Put tomatoes on to boil after washing and boil gently ½ hour; then press through a sieve to remove seeds and skin. Return to enamelled kettle and boil down to 1½ gals. then add the vinegar and again boil down to 1¾ gals. Then add sugar, salt, and spices, stir until well mixed and boiling.

Bottle while hot, air tight.

I have simply mentioned tomatoes up to the present. As every one knows, cucumbers are the leading source of pickles, and any amateur can raise cucumbers. In fact, it is not necessary to "raise" cucumbers, it being necessary simply to spade up any place in your lot about three feet in diameter, throw in a little dressing and cucumber seed, and you should have a splendid crop. You can raise little cucumbers for pickles, or ordinary long spine cucumbers. Sweet cucumber pickles are made from ripe long cucumbers. These are the highest priced pickles purchasable in the fancy grocery stores and women's exchanges. Last summer I collected about half a bushel of these from my garden and my family made the pickles, getting splendid results. My cook gives me the two following rules for pickles:

RIPE CUCUMBER PICKLE

Pare and remove seeds from 5 quarts of ripe cucumbers, and let stand over night in strong salted water. Drain and place in kettle covering with 2 qts. cider vinegar.

Add 1 tablespoon each	2 lbs. brown sugar
Cinnamon	3 red peppers chopped
Allspice	
Cloves	

Boil until soft. If vinegar is too strong, use ½ vinegar and ½ water.

TINY CUCUMBER OR GHERKIN PICKLES

Select about a hundred prickly cucumbers of uniform size, wash and pack in a large crock. Add 1 cupful of salt to sufficient boiling water to cover the cucumbers, and pour over them. Cover closely and let stand two days. Then drain and wash in cold water, selecting only the firm hard ones and packing in a clean dry crock.

Heat 1 qt. of cider vinegar and ½ cup brown sugar until it boils. Add ½ cup horseradish slivers, 1 red pepper, 2 green peppers, ½ cup nasturtium seeds, ½ oz. celery seed, ¼ oz. of stick cinnamon, 2 oz. mustard seed, 1 teaspoon alum, broken into bits, ½ small onion, 1 doz. cloves, and a bit of mace.

When this is boiling, strain and pour into crock, stirring cucumbers from the bottom. Cover closely and let stand a week, then reheat the liquid, pack pickles in jars, fill jars with hot vinegar and seal or replace pickles in jars and cover closely.

But tomatoes and cucumbers are not the only articles to "put up." Beets can be put up both in the form of pickled beets and also as stewed beets in jars. When the beets are pickled, it is customary to put them in glass jars, simply pickling them slightly with vinegar. The large beets are usually used for pickling. When the beets are to be cooked, the small ones are used and placed in air tight jars.

Space forbids giving details regarding the possibilities of canning vegetables for winter use; but I must add a word relative to preserving green peas and string beans, and the beets above referred to.

CANNED PEAS

Wash and shell the peas and pack tightly in jars, fill with warm water and put on tops of jars without the rubbers.

Place on a rack in a boiler and pour in enough warm water to half cover the jars and keep the water at that height. Heat gradually and boil 1½ hours. Try the peas and if soft add 1 teaspoonful salt to each quart of peas and cook ½ hour longer. Put on the rubbers and clamp the fastener and cook ten minutes longer. Remove from fire and turn upside down to cool.

CANNED STRING BEANS

Treat the same as peas, cutting in ½-inch pieces, filling jars and adding salt after 1½ hours cooking. These will require 4 hours of cooking after adding the salt.

CANNED BEETS

Treat in same way as peas, omitting salt and cooking 2 or more hours, according to size.

From the above, it will be seen that the vegetables obtained from a backyard garden during the summer form only a part of the profits. Great profits as well as great pleasure comes also during the winter when vegetables are scarce, when canned goods are distasteful, and the head of the family can go to the cellar or the closet and obtain some of his own products. Here is a real solution of the cost of living problem — which as I first said, cannot be solved by Presidents or Legislatures, but by you and me in producing more and wasting less. We can therefore produce more by means of the backyard garden and waste less by means of the preserving jar and pickling crock.

ADDITIONAL RECIPES

CANNED BEANS

Cut up string beans and pack closely in glass jars, fill with cold water, add a teaspoonful of salt to a quart jar; put jars in a boiler of cold water, and cook 2½ hours after the water comes to a boil. Then open one can and fill other from it as the beans shrink a little in the process of cooking. Adjust rubbers at this time. The water in the boiler should rise to about two thirds the height of the jars.

CANNED BEETS

Boil small beets, as for the table, and until tender, in salted water; have jars hot, and as soon as beets are cooked, remove the peel and pack in jars; fill with boiling syrup and seal immediately.

Sirup:— 1 cup of granulated sugar to two quarts of boiling water.

P. S. Large beets can be used by slicing, but are not as satisfactory as the smaller ones.

TOMATO PRESERVE

Peel ripe tomatoes, then take a pound of fruit to a pound of white coffee-crushed sugar; put the sugar in a kettle with a little water. After it is thoroughly melted put in the tomatoes. When about half cooked, cut whole lemons into slices and put in about one lemon to four pounds of tomatoes. It usually takes about an hour to cook it. Boil gently and skim very carefully while boiling.

CHILI–SAUCE

Twenty-four ripe tomatoes, 1 onion, 1 pepper. Chop separately and very fine. Add 2 tablespoonfuls of salt, 1 of allspice, 1 of ginger, 1 of clove, 1 grated nutmeg, ½ cup of sugar, 1 quart of vinegar. Mix thoroughly and simmer two hours.

PICCALILLI

Chop separately 12 medium-sized green cucumbers, the same bulk of green tomatoes, 10 green peppers, 10 onions, one small cabbage, two bunches celery, ½ pint of white mustard seed; add 3 quarts of vinegar, mix and when about two thirds cooked, add 1 quart of brown sugar. It should be cooked slowly and about two hours in all.

SWEET PICKLE

Take ripe cucumbers, pare and scrape out the seeds, cut in dice shapes, sprinkle with salt and let stand over night. In the morning scald with vinegar water, then place in clear vinegar, using 1½ cups of sugar to each quart of vinegar. Put in stick cinnamon, whole allspice, cloves, and pepper (the spices to be tied in a muslin bag or bags), boil until the cucumbers are tender. When cool, put in a stone jar with a cloth under the cover.

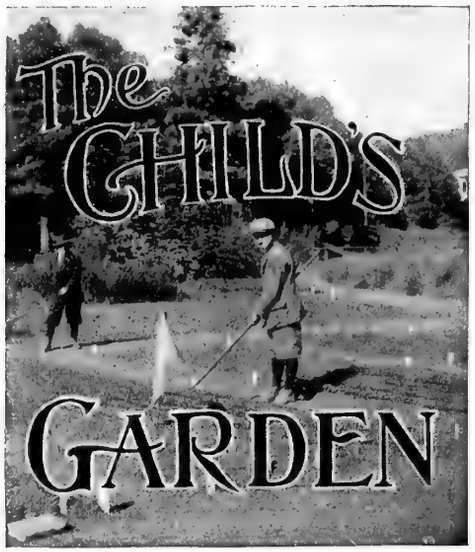
PICKLED CAULIFLOWER

Wash cauliflower and divide into sprigs. Steam in salted water until tender, then place in hot glass jars, cover with boiling vinegar and seal.

MUSTARD PICKLE

Two large cauliflowers, 2 quarts of green sliced tomatoes, 1 pint of button onions, 1 small white cabbage, 6 green peppers. Chop all but cauliflower, which is cut in chunks and boiled. Add 1 cup of salt. Cover with cold water, and let stand 24 hours; then scald and strain.

Dressing:— Ten tablespoonfuls of mustard, one tablespoonful of tumeric powder (about 2c. worth), 1 cup of flour (prepare flour with water as for gravy), 3 cups of sugar, 2 quarts of vinegar, a pinch of cayenne pepper, cook all together, and when hot pour upon the other mixture. Bottle while hot.



CONDUCTED BY ELLEN EDDY SHAW

Garden Results

RESULTS in gardening are not all there is to gardening but results do tell stories after all. Below are result stories. They are not all of this season's work or the work of any one season. But they are significant and typical showing what has been done and what can be done. Some of these are reports of individual work; others, reports of community work:

There were thirty children in the garden connected with The Children's Home of Jersey City, ranging from five to seven years of age. Even the smallest ones have carried stones and weeded. The plot is 100 x 100 ft. and part of this was laid out in thirty individual plots 5 x 10 ft., one for each child. In the individual plots the children raised radishes, bush beans, carrots, onions, and lettuce; as second crops, kohlrabi and Swiss chard were planted; also, each plot had one pepper plant. Outside of these plots the children cared for 95 tomato plants, 12 eggplants, 30 hills of pole beans, and successive rows 25 feet long of beets, carrots, beans, turnips, and kale. There were two plantings of corn each consisting of 8 to 10 rows 25 feet long. Hemp, cotton, flax, and broom corn were planted in observation beds. Some chickory salad, cucumbers, spinach and parsley completed the list. The harvest is not over yet and they have already furnished the Home with 1,000 beets, 660 tomatoes, 84 quarts of beans, 1,615 carrots, 484 onions, 1,025 radishes, 100 bunches of lettuce, 386 ears of corn, and 7 eggplants, besides a few cucumbers and peppers.

Jersey City, N. J. ANNA T. MOLTEN.

I am seven years old and my garden plot measures 35 feet by 12 feet. This is what I raised in my garden: potatoes, 1 peck; tomatoes, red, 1 peck, and 4 quarts yellow ones; bush beans, 1 quart; radish, 200; lettuce, 1 peck; beets, 50; carrots 60; peanuts, 22 on one plant; turnips, 75; pumpkin, 8; cucumbers, 50; mustard, 2 bunches; kohlrabi, 50; cabbage, 6; muskmelon, 2.

Groton, Mass. ALFRED DURANT.

I respectfully submit the crops as gathered from August 1st to September 17th, of the same year inclusive, underestimating somewhat because some children failed to enter their figures. September cropping was on the 3rd, 10th and 17th only.

Beans, 325 quarts; beets (not counting beet greens), 1,900; carrots (just beginning to be ready to harvest), 110; lettuce (summer planting), 900 heads; onions scarcely ready for harvest, so a negligible crop; radish (summer planting), 900, and any that will be ready in a few days for the Morris Cove children; tomatoes, 4,050 with perhaps 500 more on the vines.

Records were begun July 16th, but were lost for July 26-31 during the Director's illness. Not until July 7th did the children come twice a week.

It is to be remembered that the Morris Cove children preferred to come in a body of twenty even if a third of them had to be content with gardens 8 x 8 ft. The total number of children; was always between 46 and 50. Some sixty asked for gardens of which there were sixty-two in all. Probably seventy-five children did some gardening during the summer.

Trinity Garden School.

Hartford, Conn. M. LOUISE GREENE.

I am eleven years old, my garden measured 65 x 12 ft. and this is what I raised on it; pole beans, 2 pecks; corn, 48 ears; beans, 2 pecks; beets, 75; turnips, 100; radish, 460; turnips, 300; kolhrabi, 300; carrots, 100; lettuce, 85 heads besides some small stuff.

Groton, Mass. ERVING KEZAR.

Last year I netted $115 from my garden of 9,000 square feet. About the middle of March I planted in my greenhouse seed of lettuce, cabbage, cauliflower, salvias, marigold, China pinks, and snapdragon.

Tomatoes were planted the 1st of March and later transplanted into hotbeds. My greenhouse, which I built in the fall of 1911, has taken up 1,200 square feet of my garden, leaving me only about 9,000 square feet to cultivate. My sales from vegetables, young plants, and repotting plants for others, amounted to $115.22.

Besides above sales I supplied one family of six and another of four with vegetables all summer.

Worcester, Mass. ROGER NEWTON PERRY.

Uncle Sam's Newest Experiment

TOMATO RAISING has suddenly become extremely popular among the girls of the rural communities and small towns of Alabama.

Clubs are formed by State agricultural instructors, and seeds and printed matter are furnished by the Government. Each member is pledged to cultivate one tenth of an acre and to use the regulation 3-pound cans and the club label for her canning. Little expense is attached as only a capping iron, a "tipper" and a stove are necessary for this part of the work.

The state champion, Ava Hovater, raised and canned 1,510 quarts on her plot. These were exhibited at a local fair and sold at a profit of $101.

One eight-year-old girl made a record of 803 cans, and a stocking-mill worker earned as much from her tomato patch, cultivated before and after mill hours, as she received for her summer's toil in the factory. Next year she will "do nothing but raise tomatoes."

Birmingham, Ala. LEE MCCRAE.

School Fairs

THE old time *public examination* held before the Christmas holidays has unfortunately gone out of fashion to a large extent. It was a useful and enjoyable institution. It furnished an enticing occasion for the parents to visit the school and thereby keep in touch with the children's and teacher's school work. With the increasing interest in the vocational work of school children, a school fair can be made to take the place of the public examination in some respects.

Perhaps the month of September will be found the most suitable month for it as a general rule. If the exhibits are to be chiefly of early flowers, pupils' school work in drawing, writing, etc., the Fair may be held in June. If the exhibition is to take the form of a fruit show, the month of October will be preferred generally. But in September, the exhibits may include vegetables, flowers, fruits, grains, and field roots.

In preparation for the Fair the date should be announced at an early date and means taken to have the purpose of this phase of school work made known to the neighborhood. Invitations should be issued, these being prepared by the pupils, a brief programme of songs or drills prepared and arrangements made for the decoration of the school, the judging of exhibits, and the distribution of prizes. If the people of the district support the scheme well, a lunch might be provided for a picnic on the school grounds.

On Fair Day, the morning should be spent by pupils and teachers in placing the exhibits, decorating the school and putting everything in good order so that the visitors may be pleased with "their school." The judges should come early after dinner, before there is any crowd, and place the awards on the exhibits. A programme should be placed in the hands of the master of ceremonies and strictly carried out. The teacher should take the opportunity of addressing the parents and explaining what she was attempting to carry out and what help she desired. In distributing prizes if it is decided to have anything more than ribbons or cards, there should be an endeavor made to give every one presenting a worthy exhibit some credit. In place of a few money prizes going to a few exhibitors there should be many prizes consisting of books, pictures, bulbs, seeds, vines, apple trees, etc.

Guelph, Canada. S. B. MCCREADY.

Seeds in the Bulb Bed

SCILLA SIBIRICA and Puschkina made plenty of seed in my garden in 1912. The berry-like green three-celled pods on prostrate stems opened on to the ground in July and discharged five or six seeds each, almost as big as an elderberry, and blacker. I planted them at once, because most of the lily family resent having their seed staled by drying. With the blooming of the plants in March, 1913, the seeds germinated — an arrangement for parental chaperonage, as it were, that is almost an affectation in a wild flower of the open steppes destined by nature to fend for itself through life.

Puschkina seedlings look and behave in all respects like the scillas (which is to say, exactly like young Prizetaker onions). They grow close together, and as I keep a number of hives of bees their parent flowers had every opportunity to be crossed. I shall watch with interest to see whether a Puschkiscilla will appear in the little Russian family party; or whether "In spite of all temptations, He remains an Englishman."

Pennsylvania. E. S. JOHNSON.

This garden received a cash prize of $25. It is a good type of home garden

THE LITTLE FARM

Ten Acres Enough* — Chap. X.

(*Concluded from page 22, August, 1913*)

SOMEHOW it happens, that almost every man who has been city-bred feels at times a strong desire to settle down among the trees and green fields, from a vague and undefined belief that in the country human life attains its highest development. He cherishes a hope, though perhaps a faint one, that he may yet possess a country house, where he may tranquilly pass his latter years, far away from city tumults and trials. This hope is founded on the instinctive desire there is in human nature to possess some portion of the earth's surface: I know that one looks with indescribable interest at an acre of ground which is his own. I am sure that there is something remarkable about my trees. I have a sense of property in every sunset over my own hills, and there is perpetual pleasure in the sight of the glowing landscape at my own door. I have found Ten Acres Enough; and I know well what pleasures, interests and compensations are to be found in the little affairs of that limited tract.

I went into the country with a determination to succeed. As others had there succeeded, I could not be induced to believe that failure in so simple an enterprise could overtake me, as I felt quite as competent as they. A resolute will overcomes all difficulties.

Even intellect is secondary in importance to will. A vacillating man, no matter what his abilities, is invariably pushed aside, in the race of life, by the man of determination. It is he who resolves to succeed, who begins resolutely again at every fresh rebuff, that reaches the goal. In fact, talent without will is like steam dissipating itself in the atmosphere; while abilities controlled by energy are the same steam brought under subjection as a motive power. Or will is the rudder that steers the ship, which, whether a fast-sailing clipper or a slow river-barge, is worthless without it. Talent, again, is but the sail; will is what drives it.

WHERE TO LOCATE — EAST OR WEST

When buying your farm, location is perhaps the most important consideration. A cash market all the year round, for every variety of produce that a man can raise, is of the utmost importance to secure. Such is invariably to be found in close proximity to the great cities; and there, singularly enough, the wealthiest farmers in the Union will generally be found. When we go to the extreme North, where their market is limited, and where they produce only the heavy grains and grasses, farming is so little an object that improved places can always be bought for less than their cost. It is very frequently the same throughout the West, where so much that is raised upon a farm is valueless; and where, for even the grains, they have a market which barely pays the expense of living. The expense incurred in farming can be regulated by the profit of the crops; and where even no manure is required, the labor has to be expended, and crops in distant localities often fail to pay the expense of this labor. The difference in value existing between those farms near a market and those remote from it, is enormous.

So far as real, practical farming is concerned, it will be found that the East is incomparably superior to the West; but, so far as small farmers like myself are concerned; it would be folly to deny this superiority.

If my example be worth imitating, land should be obtained within cheap and daily access to any one of the great cities. If within reach of two, as mine is, all the better, as the location thus secures the choice of two markets.

I sought a location in New Jersey. There unimproved land, within an hour of Philadelphia, was to be purchased for the same money per acre which is paid in Pennsylvania as annual rent. For ten to twenty dollars more, in clearing up and improving, it can be made immediately productive, as the soil of even this cheap land is far more fertile than is generally supposed. Thousands of acres of this description are always for sale, and thousands are annually being bought and improved, as railroads and turnpikes leading to the city are being established. Many Germans have abandoned the West, and opened farms on this cheap and admirably located land, from which they raise prodigious quantities of fruit and truck for Philadelphia and New York.

To those with no capital but their own labor and a determination to conquer success, these lands offer the highest inducements. Most of them can be had on credit, by men who will settle and improve. This tract is distant but a few miles from the Delaware River, and probably no better could be found. Any number of locations can be had. Many are already improved by buildings, fencing, and all the preliminary comforts which cluster round an established home.

But there is a better country elsewhere, where any number of locations may be found, improved by buildings, and at moderate prices, as well as on favorable terms as to payment. Vast progress in improvement has been made through all this region within ten years. New towns have been built, new turnpikes constructed, while the great railroad puts the cultivator in constant connection with the two overgrown cities at its termini. A location within such an atmosphere of improvement must continually increase in value. The owner will find himself growing richer from this cause, just as the trucker on the Pennsylvania side has done — not so rapidly but quite as surely. An investment in such land, properly managed, and not permitted to deteriorate, will assuredly pay. My own little farm is an illustration, for more than once have I been solicited to sell at double the price it cost me.

But choose as he may, locate as he will, the individual must not, as he hopes to profit by growing the smaller fruits, locate himself out of reach of a daily cash market. New York and Philadelphia may be likened to two huge bags of gold, always filled, and ever standing open for him to thrust in his hand, provided in the other he brings something to eat. The appetite of the cities for horticultural luxuries has revolutionized the neighboring agriculture, enchanced the value of thousands of acres, infused a higher spirit into cultivators, elevated fruit-growing into a science, and started competition in a long rivalry after the best of everything that the earth can be made to yield. All this is no spasmodic movement. It will go on for all future time; but in this grand and humanizing march after perfection in producing food for man the careful tiller of the soil, with moderate views and thankful heart, will be sure to find TEN ACRES ENOUGH.

(*The End.*)

Preparing for Alfalfa in the Fall

THERE is no better yielder of high-quality food for stock of all kinds than alfalfa. While autumn is not the time to sow it, there is no better season for putting the ground in readiness for it. Proper preparation of the soil is of most urgent importance, especially that it be made mellow and free from weeds. A failure with alfalfa is usually due to the lack of one of these essentials. Plow your land in September or October and leave it exposed to the action of frost and snow all winter. As soon as stable clearing begins, let the manure be drawn direct from the gutters to the field and spread, filling the soil with it as much as possible. Plow in such a manner that the earliest spring plowing may be cross plowing, to be made still more fine and mellow by repeated stirring every two weeks until sowing time. The result will be a perfect seed bed practically free from the enemy, weeds; for stirring the soil not only aerates it and permits the growth of helpful bacteria, but it persecutes the little weeds that so love to start in fertile and fine earth. Never forget that young alfalfa is a poor fighter of weeds, and unless given assistance in advance of sowing, is often vanquished. Another thing to be remembered is that alfalfa will not thrive on wet soil; hence now is the time to put in tiles, if the place selected is not naturally drained. Let the drains be put in deeply, since alfalfa is a deep feeder and one of the best resisters of dry weather. Now make arrangements for soil with which to inoculate the field; the best time to get it and put it on is when the weather is mild and moist. The amount is 500 lbs. or more per acre. If the soil needs lime, send now for it, and spread it during the first leisure, so that it will be doing its work.

PERCY NOEL.

Walnuts for Profit

WOULD it be feasible to plant the paper shell pecans and walnuts, both for shade and profit, in Medford, Ore.? F. R. C., Oregon. — I believe it is quite possible to grow the walnut in Rogue River Valley, in which Medford is located. However, the planter ought to use preferably the native California stocks, and only the northern type of nuts. These can be obtained from nurserymen in the vicinity of Chico. Beginning at the foundation this way, it would be necessary to plant the nuts two or three in a place where it is desired to grow them.

At the age of three or four years possibly five, top-graft them to the Persian, hardy varieties of which we will be able to suggest at that time with rather more confidence than at present. If the trees are to be planted in the orchard it would be better to put them at least fifty to sixty feet apart on good soil which is suited for orchard purposes in that section.

As a matter of fact the cultivation of the walnut as a shade tree ought to be encouraged in all parts of the country where the native walnut will grow. In most sections I believe it will be possible to top work them successfully with some varieties of Persian walnuts. The timber itself is very valuable, and the nut is becoming more so as we learn to appreciate its value as a food product.

Butternuts and hickory nuts ought to be used also in every section where they will grow. For shade purposes the nut trees ought to be used, rather than trees which produce no edible fruit.

Personally I should feel that anything that can be done to encourage the planting of nut trees for shade purposes particularly along high-ways, lanes, division fences and brook sides, will result in great good to the country.

Washington, D. C. E. R. LAKE.

The Last of Summer

MAKE another sowing of pansies now, whether or not you planted any seed in July or August. Seed sown in July should furnish plants for transplanting during the month.

Plant out peonies. They won't flower quite as well in the South as at the North, but they are well worth growing. Give them quantities of water. A potash fertilizer will also aid in the production of flowers.

After harvesting let the hay cure well before packing it away permanently.

If you have a cow, a horse, or poultry be sure to sow some rye. Manure it well.

September is a good time to prepare for and sow the following for winter greens and root crops: Lettuce, kale, mustard, radishes, beets, turnips, carrot, and parsnip. Remember it is just as important to thoroughly prepare the soil. Fertilize now as thoroughly as in the spring.

Look out for the black squash bugs and borers which will appear on late squashes. Most of the plants they have been feeding on are dying out and they will attack the few green things that are left in the garden.

Crimson clover may be sown now for winter cover crop. I believe many of the Southern farmers and gardeners are making a great mistake in not paying more attention to this winter cover crop and pasture proposition.

Essex rape is an excellent green food for hogs and poultry in winter and may be sown now.

Set out the winter cabbage and collard plants.

Georgia. THOMAS J. STEED.

If the Soil be Poor, Then What?

TWO of the most serious problems to the man who owns land that refuses to yield a crop are: How to fill the soil with plant food and humus with little expense, and how to free it and keep it free from weed pests. Fortunately the two labors may be accomplished by one process; keep the soil seeded with useful crops, all the year through, and plow them in as often as conditions permit. Persons with but little training may be discouraged by the sight of a rank growth of weeds, but a heavy cover crop of almost any kind is a reason for congratulations. Weeds are killed by being plowed under and by their decay the soil is improved in mechanical texture and in fertility. Chemical action on other plant food begins, and it is made ready for use, and this vegetable fibre acts like a sponge in catching and holding water for plant use.

It is the soil which yields no weeds nor any other growth that ought to make a man anxious. If the owner has no fertilizer and must depend upon plant growth to enrich the soil from the air, he begins by thoroughly pulverizing the soil and sowing vetch, which produces pods which snap open and scatter their own seeds. They live over winter in the earth. The ground is kept seeded and covered and the plants, falling down, make a mulch, or, if plowed in, provide humus. Humus aids in keeping water in the soil, and this prevents the loam from getting over heated. Humus changes minerals in the soil into plant food. It makes clay soil mellow. It binds sandy soil, giving it more substance and quality. Humus holds nitrogen in the soil, and nitrogen is the most valuable and the most expensive plant food we have to buy.

Connecticut. HOLLISTER SAGE.

Bulbs in a Southern Garden

ALMOST all articles on how to grow bulbs are written by Northerners for their part of the world. Here in the South conditions are very different. It is not with us so much a question of hot and cold, as of dry and wet. In the South we sow seeds of biennials and many annuals in the fall. Poppies and sweet peas are sown in November and December, so that the roots may penetrate as deeply as possible into the soil and be better able to resist the hot winds of early spring. Sweet peas bloom in April and poppies in May. Pansies are expected to begin blooming before Christmas, and violets and sweet alyssum bloom all winter; although hurt by each cold wave, they recover within a few days and bravely push out their buds anew.

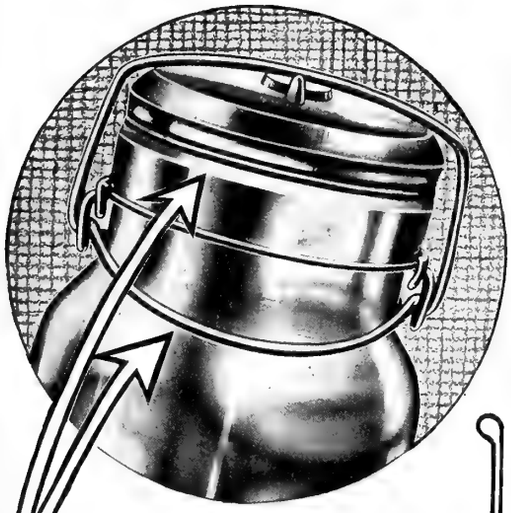
All books tell us to take up our bulbs after they have bloomed and the foliage turns yellow; then carefully ripened and dried off, they are packed away until planting time in the fall. In the South, bulbs so treated develop dry rot and fall finds nothing in your package worth planting. So we choose for our bulbs a spot where they can remain undisturbed from year to year. They do well under deciduous trees and shrubbery. All my flower beds have a bulb border about three feet wide which later on is filled with larkspur, phlox, poppies, forget-me-nots, etc. When the bulbs are in bloom, these little plants give a green ground cover. In the South our lawns are planted with Bermuda grass, whose strong, deep-growing roots enable it to withstand the summer sun, but the top is killed by the cold. The bulbs bloom before the grass is green again, so scattered bulb planting on the lawn is rarely seen before the crocus comes in March, looking like blue and white and gold bubbles amid the grass. Later comes the poet's narcissus, long after the early daffodils and Roman hyacinths have faded.

The rainfall during the last of August and early September determines the time of blooming for early bulbs. They have been fast asleep in their sunbaked beds since the spring. It needs a good deal of rain to soak the ground for six or eight inches, but when they get it the bulbs begin to throw out little rootlets and slowly start toward the light. The paper white narcissus comes first. I have picked hundreds of these from my garden at Thanksgiving, and one year more than 1,000 before Christmas. If the late summer is dry (as often happens), the bulbs wake up late and a cold wave will blast every flower; if it is too cold for them to grow, they seem to stand still until February's warm rains bring a profusion of flowers. Knowing that a late dry summer means no early flowers, I buy several hundred paper whites and plant them in boxes where they can be protected. These will bloom for Thanksgiving and Christmas, and as fast as the blooms are cut the bulbs are transplanted to the garden, six inches deep at least. In two or three years they will give fine blooms again.

Next to appear are the white Roman hyacinths, increasing from year to year, and throwing up several stalks of bloom from each bulb, and later on the pink and blue and yellow Romans, which are beautifully placed in violet-bordered beds, or with pansies. The pink are especially pretty with a ground cover of white alyssum.

Being late bloomers, the Dutch hyacinths and tulips are not satisfactory garden bulbs, except in favored localities, weather conditions favorable to their perfect development occurring about once in ten years, as the hot, dry winds of March blight the buds before they can open. But plant these beautiful bulbs, as many as you can afford, in pots and boxes for decorating the house and veranda, where you can help or retard their time of blooming. Afterward transplant to the garden shrubbery, and in the succeeding years you may get an occasional spike from the hyacinths, but never a bloom from the tulips.

By far the most satisfactory bulbs for garden culture are the daffodil, jonquil, etc. Every year I buy a few new varieties which I plant in boxes, so close that the bulbs almost touch each other. Then, when they bloom, I transplant to the spot in my garden where they seem to be most effective. But all bulbs ripened North bloom later the first year than afterward. Remember, if you wish *early*



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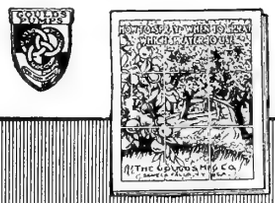

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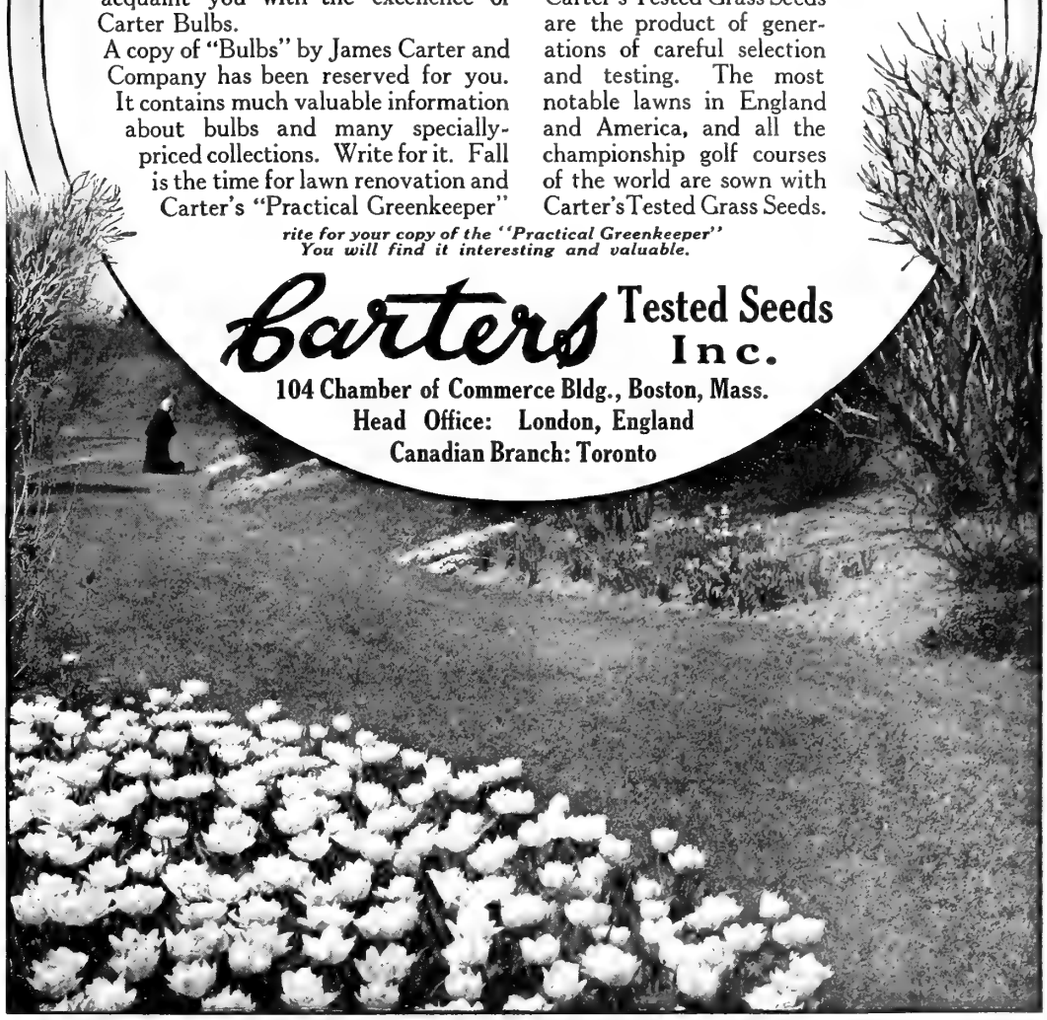

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bloom, plant shallow; but the stem will be short. Deep planting brings big blooms and long stems. The bulbs should be transplanted, or rather divided, before getting too crowded. I have seen gardens where the bulbs have been undisturbed for twenty years, still blossoming, but the blooms were few and small and the stems very short. This division is best done immediately after the bulb has bloomed and while the bulb is still in a growing condition. It is better for the bulb as the ground is damp and friable and it can be lifted, sacrificing few roots. It is better for me because I can see to better advantage just where a line needs to be widened or a curve changed to make the border more beautiful and effective for another year. I have often heard people say "You will ruin them to take them up at this season." I have 50,000, and all have been planted in this way. But I do not let the roots get dried out before I plant.

The early daffodils are peculiar in pushing the bud out of the ground before the leaf. I take advantage of this and take up clumps for window boxes or pots, putting back the bulbs too small to bloom. I barely cover the roots with earth; the light soon changes the white stem to a healthy green and plenty of water gives me blooms ten days or two weeks sooner than if I had left them in the garden. Then follow in the garden in gay disorder hordes of jonquils, polyanthus narcissus, Emperor and Empress daffodils, *Leucojum vernum*, etc., etc. It is curious to watch the shades of green in the foliage which exactly suit the shades of bloom.

Florida. MARY H. BOWERS.

A Window Garden of Bulbs

ALTHOUGH I had some failures in my window garden last year, I derived a great deal of pleasure from it when the temperature out of doors was down below zero. If you possibly can, pot a few bulbs this fall; you will be amply repaid for your effort especially if your list includes hyacinths and freesias.

Our house faces the north and, as there are only two south windows, each of which is the sole means of lighting a large room, extensive floriculture is impossible. Each window is in the corner of the room and a large radiator prevents additional tables or shelves. The window sills are ten inches wide, however; the upper window is the only one of the two which I can use and in this one I brought all my bulbs to flower. To be sure there are east and west windows, but the subject of heat, the uses of the rooms, and the location of trees make all but one of them, a west window, impossible, and that receives very little sun during the shorter days.

I spent $1.19 for the following bulbs:

Three hyacinths, yellow, blue, and rose; 8 crocus; 4 scillas; 12 freesias (long trumpet); 3 Princeps narcissus (medium trumpet); 3 Stella narcissus (medium trumpet); 3 Cynosure narcissus (long trumpet); 3 Hoop Petticoat; 2 Peacock iris.

When potting them I put in small stones and charcoal and then the soil. I used good garden loam but, had I included in it a little well rotted manure, my blossoms would have been much larger and better.

The crocus were potted first on September 16th. These were one of the experiments. On January 1st, they were two inches high and showing buds

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through the white sheath, so I brought them upstairs. Through several buds came on enough to show color, only three blossomed about February 1st. One bulb threw up two flowers, the other only one; but that was a very fine large one about five inches high. I think probably they were too warm, both in the cellar and after being brought up, for the three blossoms came after the pot had been set in a cool out-of-the-way window.

The scillas were potted September 22d. They were another experiment. December 20th the buds were trying to push out of the leaves so I brought them upstairs. Though they tried hard to blossom, the flowers looked so sickly and stunted that in disgust I set them back in the cellar where they struggled for recognition all the spring.

The blue hyacinth was also potted September 22d, and brought up January 18th, being about two inches high. The buds began to open February 9th and it was a little over two weeks before the last flowers faded. A second though smaller head had come into bloom before the first was quite gone, thus prolonging its beauty.

On October 2d, the remaining bulbs were potted and, with the exception of the freesias, all were buried in a bottomless box in the garden, and covered with leaves and boards until November 2d when they were brought into the cellar.

The freesias were set in the cellar until October 16th. They were then kept out of doors until there was danger of frost. There were two pots of these, a 6-inch pot containing seven bulbs, and a 5-inch pot with five bulbs. The smaller pot began to blossom January 17th and I was happily surprised in the size of the blossoms, the buds had seemed so very tiny. These lasted about two weeks. The bulb in the larger pot began to blossom January 20th and lasted about the same

The blossom of this blue hyacinth, potted in September, lasted from February 9 to 23

length of time, though they did not bloom as freely as the first. If potted in August flowers may be had for Christmas.

The yellow hyacinth was brought up December 28th, and set in a north window where the blinds were closed, later taken to the light. On January 10th the blossoms began to open when not yet out of the neck. I placed over it an inverted cone of heavy paper, leaving it about two weeks. This drew the blossom head up and it made a fine stalk; another large head and two smaller ones developed and it was March 9th before the last flowers faded.

The rose-colored hyacinth was brought up February 8th, being two inches high, and began blossoming February 24th. It was set back in the cellar March 9th. This threw up only one very closely filled stalk.

The daffodils and narcissus were brought up at

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various times, in each case when the leaves were from 1½ inches to 2½ inches high.

A Cynosure and a Princeps were the first to blossom, February 2d. On the 10th Stella and another Princeps came out; 11th, Cynosure appeared; 14th, the third Princeps; 19th, the last Cynosure; and on the 21st, another Stella, though not a perfect flower. One Stella did not blossom at all. The Princeps, all yellow with long trumpet, were the prettiest.

The Hoop Petticoats were a disappointment as they did not look at all like the illustration in the catalogue. They were very dainty little blossoms and came about the same time as the others. In all cases the flowers lasted five or six days.

The Peacock iris was brought up December 8th. The leaves were long and grass-like. I should like to emphasize the "long" for one grew to be 16 inches. Leaves, however, were all it produced; evidently its environments were not suited to its fastidious taste.

Beginning about February 1st, I gave the plants weak manure water about once a week. All the plants were gradually inured to the light before placing in the sunny window, and when the blossoms opened they were set in a cool, north window, thus preserving them for a longer time.

Ohio. LOU E. HURST.

A Lily Eight Feet High

CAN you imagine a plant of the lily family with a stalk eight feet high and bearing several hundred flowers? If not, look at the accompanying picture and remember that this plant is taller than a man. It really belongs to the lily family (though not the genus Lilium) and has white, bell-shaped flowers that clearly resemble a lily. The individual flowers may be an inch or two across and you can

The giant lily (*Eremurus robustus*) with a stalk eight feet high bearing several hundred flowers

see that about four feet of the stalk is crowded with these flowers. The species here figured is *Eremurus robustus*, sometimes called the giant lily.

There are two peculiarities about these giant lilies. They must be planted in August or early September and you should cover them in winter with a mound of ashes, topped by leaves, or else with a box that will shed the rain. The buds come through the ground with a tumultuous rush, heaving the earth in all directions like a gigantic asparagus plant. Keep it back if you can. It wants to grow too early. Cover it with a box during February and March for the bud is easily spoiled by a frost. W. M.

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Seeds to Sow Now for Winter

ONE of the best flowers for Christmas decoration is the cineraria. The flowers are of a peculiar velvety texture and range from shining crimsons through the richest blues, royal purples, and deep maroons, often with centres and borders of sharply contrasting colors. The plants in shape are round, growing to a height and width of about fifteen inches, and during their blooming period are a mass of crowding flowers, surrounded by the broad thick lower leaves which resemble those of a begonia. Sow any time from May to middle of September though better luck will probably be had from the first or last of those months, as the young plants should be kept cool. After the seeds have sprouted, keep the seed pans or "flats" slightly shaded on hot days. In growing on, never allow the young plants to become pot-bound, and give plenty of light and air, keeping as cool as possible. Syringe the foliage every day, unless the weather is very dull, and never allow the soil to suffer for water. The last shift should be into five or six inch pots. They are harder to grow than some of the other house plants, but they can be had, especially if one has an empty coldframe or shady veranda nook, where they can be kept cool during summer.

Pansies in February may be easily had by starting them in late August, in small boxes of rich, light soil. Plunge in some sheltered, well-drained place, where they can be protected without being smothered by hay or leaves during the winter. Take in the plants in February and give plenty of moisture. They will bloom a long time if kept in a cool room, and given little direct sunlight.

The Comet type of aster, especially the white variety, with broad, reflexed petals, when grown in pots to single stems, may be had four inches across. Sow in June and August and keep potted along, taking care to remove all lower laterals, and thus get the plants in good form.

If you want to play a little trick on your friends, about September 1st, sow several seeds of the true moonflower in a 4- or 5-inch pot, having soaked them a day in warm water. (Any of the large-flowered ipomœas can be used in the same way.) They will make a very dwarf growth, but begin to bloom before they have made half a dozen leaves, and will be covered continuously with their frail beautiful flowers. Your neighbors who may not happen to know the trick will think you have gotten hold of a most enviable novelty.

In spite of all the florists have been doing to give mignonette size and color, it is still primarily valued for its rare and unusual fragrance. For plants to bloom in winter, sow in August and again in September, and keep the young plants very cool — 38 degrees at night will not hurt them. They will not require very much water, but give it thoroughly when it is needed. Have four or five in a 6-inch pot for blooming, using very rich earth. Give them some sort of supports, and keep them in a cool place in the window.

Connecticut. B. F. R.

Early Cabbage Without Greenhouse Plants

IN THE section around Albany and Troy, where a considerable area is of soil adapted to early spring tillage, very early home-grown cabbage is quite an important line of truck-farming. There are no other truck crops grown here on a field-crop scale that give as large returns as does this early cabbage. To produce it successfully it is essential that the plants be in condition to transplant to the field just as early in the spring as the soil's condition will permit. This would suggest the necessity of a greenhouse, or at least a hotbed, in which to start the plants; but in this section a method has been hit upon — and is now in general use — whereby early cabbage plants are grown in a less expensive way, and with equally good, if not better, crop results.

In a word, this method is to grow the plants in the fall and carry them through the winter in a coldframe. It may not be new in principle, but since it first came under my notice I've found that it is a new and a "never-heard-of-such" practice to

the majority of the truckers with whom I have talked, at least, in all sections of the Northeast.

The operation really begins with the sowing of the seed in mid September. The sowing is made in a well-prepared seedbed in the open, the rows being six inches apart. The plants are not grown in the coldframe but only carried through the winter in it. I prefer to sow rather thick and thin out when the first true leaf is well started, selecting of course the more healthy looking plantlets. A stubby plant with strong roots is preferable, as it stands the winter better. In mid-October, when the plants are about a month old and have attained to three or four true leaves, transfer to the coldframe; and, as they are not to grow in the coldframe but simply to get a root-hold, they are put very close, almost as close as "heeled-in" plants. My frames, consisting of two sashes of the regulation size (3x6), will carry 2,000 plants each.

In transplanting from the seedbed to the coldframe care is exercised to set them so that the entire stalk to the leaves is under ground. If the roots only are in the ground and the stalk exposed, the severe freezing of mid-winter causes the stalks to burst or split, and the plants are ruined. After the plants are set in their winter quarters they require little care beyond what is necessary to insure their roots getting a "hold" in the soil before freezing weather begins.

As the weather grows cold or the severe frosts begin, the sashes are kept on of nights and on severe days. During the daytime when the temperature is not severe, remove the sash, thus gradually hardening them to the cold. When the plants are well hardened the leaves become of a bluish or steel blue cast. Plants of this color will endure a surprising degree of cold and will come out healthy and vigorous in the spring. However, after the temperature becomes severe, I use thick mats of rye straw for protection and find them very satisfactory and easy to handle. Some of my neighbors use strips of old carpet (which are all right if one has them) held in place by a few old scantling. If the plants have been properly hardened and set deep, they may be frozen in all winter without injury. In such quarters they have survived a winter having an occasional outside temperature as low as 24 and 30 degrees below zero and come out all right in the spring.

But if a warm spell occurs and the beds thaw out so that some root action is likely, give them plenty of air by raising the sash; or it may be taken off entirely during mid-day if the day is cloudy. Care must be taken that the sun never shines on the plants during these warm spells in winter, especially not when the sash is on, as it would raise the temperature in the bed and thus weaken the plants. I nearly lost my entire lot through this oversight during one "January thaw" when the business was new to me. Since then I endeavor to keep my frames covered with snow, and shaded anyway during these warm spells in winter. As long as the plants are frozen in the bed they may remain in the dark, and the frames be covered with snow for weeks, without injury or loss. I have found it best to have these cabbage coldframes on the north side of some building, where they will not only be shaded from the rays of the sun but less exposed to sudden changes of temperature.

As soon as the winter breaks the covering is removed — part of the day at first — and the plants given the weather. Of course, if a severe freeze seems probable, they are again covered until the "wave" has passed. As soon as the soil conditions will warrant the preparation of the field. the plants are transplanted to it. In this section this time varies widely with the different years. For instance, it was mid-April last year before we could set them out, while three years ago (1910) they were set out in March and the first heads cut in mid-June.

The only pest that troubles these early cabbages is the root maggot. It is most destructive in dry hot spring weather, such as we sometimes get in May. But even so the grower who knows his business is sure to get $500 to $600 an acre from this crop. In varieties I grow both the Early Jersey Wakefield and Early Winningstadt, and have tried the Earliest Express, but it is not enough earlier to make up for its inferior heading ability.

New York. C. WESTFORD.

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A Second Crop of Bloom

SOME flowers, like all hens, are determined that the race shall not die out through lack of effort on their part. Take away their first fruits and they are right back on the job again.

Preventing flowers from "setting" is by no means the common practice that it should be. If carried out systematically, it is astonishing how varied the second crop of bloom may be, and how much clearer the color notes remain after the blossoming prime is passed.

The possibilities of the Canterbury bell in this respect rarely occur to growers of that beautiful flower. Its season is short at best and there is a blot on its beauty the moment the first bell turns brown. Unless there are more Canterbury bells than most are able to boast of, it takes little time to snip off the discolored blossoms with a pair of scissors, letting them lie where they fall. The plant looks well until the end — when, in the axils, a second crop of flower buds will be found to be developing. I use this treatment for *Campanula persicifolia* and platycodon with about the same result.

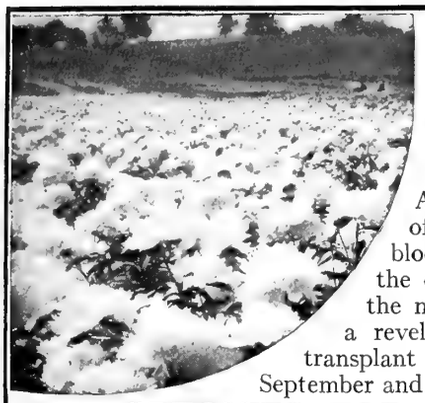
Other blossoms that are passed may be snipped in the same way to advantage, even if it does make

This hollyhock has good new growth and will live another year if not allowed to mature seed

you feel like a giant Lord High Executioner in Liliput. The anthemis, the "ragged sailor" and *Coreopsis lanceolata*, for example, are three plants that are relieved from early scraggliness by such timely decapitation. These three, in fact, are really transformed by such an operation. Others in the "snip" class are *Stokesia cyanea*, *Lychnis Haageana*, zinnia, pansy, calendula, *Veronica spicata* and grass pink, to name only a few. Pansies, in partial shade, will bloom well all through the summer if not allowed to go to seed.

Then, among plants that must be cut rather than snipped, there are first of all, the hardy larkspurs. If the stalks are cut to the ground, before going to seed, there will surely be a second crop of bloom and the Chinese larkspur will do better, keeping up the game even after the frosts come. Foxgloves frequently, and hollyhocks infrequently, give a sparse second bloom in like circumstances. In any case it is best to cut down foxgloves and hollyhocks after blooming both in the interest of neatness, and that there may not be overmuch progeny all over the place. Furthermore, the strength that does not go into seed will occasionally cause a new growth that will carry a plant of either through another season. Various veronicas, *Lychnis Chalcedonica*, *Phlox paniculata*, *Pentstemon barbatus*, var. *Torreyii*, *Monarda didyma* and dropwort are some of the other flowers that will make a second attempt to bloom.

New York. H. S. ADAMS.



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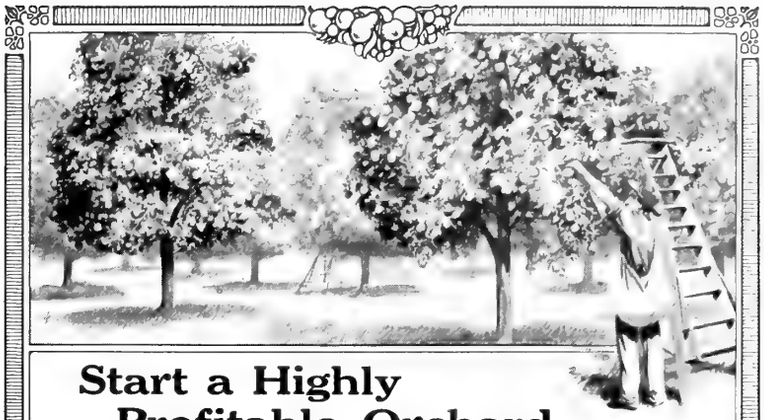

Start a Highly Profitable Orchard

THE demand for good fruit is ever increasing at highly profitable prices; nothing else on the farm brings such great returns per acre. Fruit trees in comparison with other crops require little time and can be grown by anyone who follows the instructions we furnish. We maintain permanently a force of reliable and practical men who by experience have become expert in this line; these men assist our customers in getting the greatest profits from their orchards. They tell you what fruit trees are best adapted to your soil and climate; they tell you what varieties can be grown successfully in your locality; how far apart to plant the trees; how to care for them and their cost; they tell you everything you ought to know about planting for profit or home use.

Our Trees, Shrubs, Vines and Flowers

are of the very highest class, Northern grown, healthy, vigorous and productive. Our fruit trees bear early and abundantly; they are hardy, true to name, and free from scale. All of our stock is thoroughly fumigated before shipment, making doubly sure that you get good healthy trees and plants, carefully selected, properly packed and promptly delivered in good condition.

If you contemplate a commercial orchard or the improvement of your home grounds, write us for information and special literature.

800 acres of fruit trees and ornamentals to select from.

We are the originators of the well known Climbing American Beauty and Christine Wright roses; blossoms measure 3 to 4 inches in diameter.

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Livingston's Great Dollar Collection of "True Blue" Paeonies

will prove a real surprise. We will mail strong roots of sorts named below — a bargain of unusual character and quality.

Alexander Dumas. Violet rose with creamy white collar. Freely blooming and fragrant.

Mont Blanc. White guard petals and yellow center. Fine as cut flower.

Arthemise. Soft lilac pink. Late sort of value for landscape work.

Golden Harvest. Most beautiful creamy yellow with soft pink guard petals.

Delachei. Dark velvety crimson purple. Flowers of great size and shape.

Queen Victoria. Large, compact white flowers, center petals sometimes tinged with carmine.

The set of Six (Value $2.25) for $1.00 postpaid

Paeonies in Separate Colors

The majority of these are really high-priced, *named* varieties. Of some, we have only a few — too few to catalog them separately; of others, we have a good many but not enough to make their propagation worth while. They are really fit for any fancier's collection. Many rare shades of pink and red, also white. Dozen $1.50, 100 for $10.00— by express at buyer's expense.

Write to-day for our free Guide to Fall Planting, giving dependable planting- and culture-directions for everything that should be planted in the Fall.

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TRADE "EXCELSIOR" MARK RUST PROOF

When buying a wire fence for public grounds or private estates give careful consideration to the merits of the ***Excelsior Rust Proof*** brand. Ordinary wire fences are made from wire that has been galvanized before weaving. Bending chips off the galvanizing, and rust sets in as soon as it is exposed to the weather.

Excelsior "Rust-Proof" Fences

are dipped into pure melted zinc after they are completely formed. This gives a heavy unbroken coating that is proof against snow, rain and damp salt air. It needs no paint. There is no yearly expense for up-keep.

Write for illustrated catalog "B" and sample showing "Rust-Proof" coating.

Wright Wire Company, Worcester, Mass.

Why the Pro-phy-lac-tic Tooth Brush is Known as the World's Standard Tooth Brush

A tooth brush is a small thing—with a big purpose. Tooth cleanliness—and therefore tooth preservation—are acknowledged prime essentials to good looks, good health and happiness. We believe, therefore, that we have served mankind well in giving the world the

Pro-phy-lac-tic Tooth Brush

"A Clean Tooth Never Decays"

We list here the features *originated* by the *Pro-phy-lac-tic Tooth Brush.* Perhaps you have noticed how imitators have tried to copy them point by point. Why? Because they realize that the Pro-phy-lac-tic has proved that no tooth brush can claim really to clean the teeth if it does not appear to be made the Pro-phy-lac-tic way.

If these features appeal to you, demand the original and spurn the imitation. If the only consideration were *service,* you would not need to ask for the Pro-phy-lac-tic by *name* —it would always be handed you when you ask for a "tooth brush."

Larger profits often influence some dealers to offer others "just-as-good." A little insistence, however, will always get you the "world's standard tooth brush" in its yellow box. You should insist—for the preservation of *your* teeth is worth the effort.

Brush your Teeth this Way ↕

Not This Way ⇄

Every Pro-phy-lac-tic is Fully Guaranteed
If Defective, we will replace it

Adult's size—Flexible, Rigid or DeLuxe Handles. Youth's size—Flexible or Rigid Handles. Child's size—Flexible or Rigid Handles. Four-Row, Adult's size only—Rigid Handle. Dental Plate Brush, for proper cleansing of Artificial Teeth. All styles (excepting Dental Plate) made in hard, medium or soft textures.

Send for Your Portrait of Miss Florence

We have a beautiful portrait of Miss Florence, the Pro-phy-lac-tic Tooth Brush Girl, size 12 x 16 inches, reproduced in full color from her original portrait in oil. Bears no advertising. We will send you a copy on request for 10c in stamps and will include an interesting book on the care of the teeth. Send for them.

FLORENCE MFG. CO., 181 Pine Street, Florence (Northampton), Mass.

Tooth Brush features originated by the Pro-phy-lac-tic Tooth Brush

(1) The hole in the handle and the hook on which to hang the brush are improvements *originated by the Pro-phy-lac-tic Tooth Brush.*

(2) The use of symbols to mark individual brushes so that each person may always recognize his own is a tooth brush improvement *originated by the Pro-phy-lac-tic Tooth Brush.*

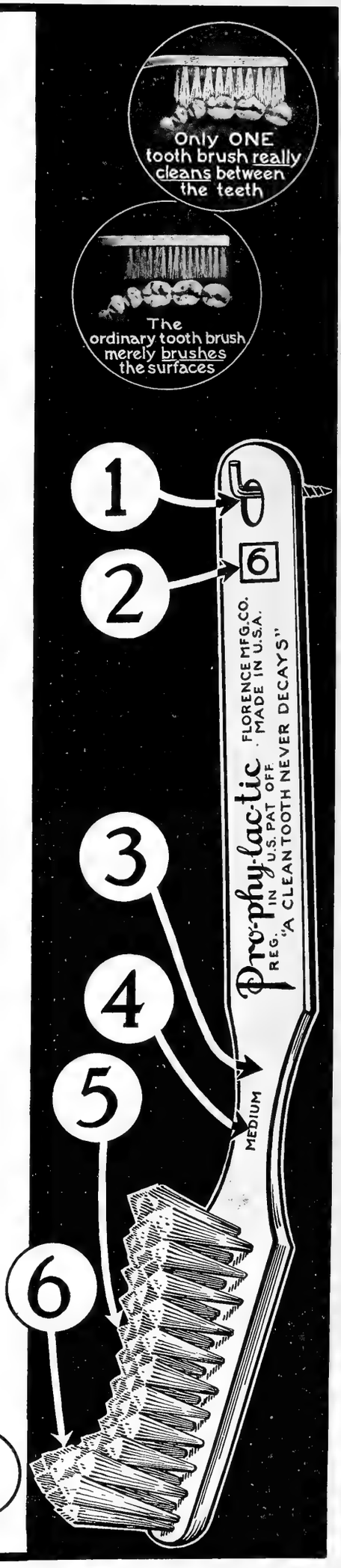
(3) The curved handle with the tapered and beveled head which enables the brush to get behind and clean all the teeth—*originated by the Pro-phy-lac-tic Tooth Brush.*

(4) *Dependable* markings of bristles as hard, medium, soft—so you may absolutely rely on getting the kind you like. *Originated by the Pro-phy-lac-tic Tooth Brush.*

(5) Serrated bristle tufts arranged to fit the shape of the jaw—known as the Pro-phy-lac-tic Shape — the big step in advance in tooth brush manufacture. *Originated, of course, by the Pro-phy-lac-tic Tooth Brush.*

(6) The big end tuft—that goes where a tooth brush ought to go—*originated by the Pro-phy-lac-tic Tooth Brush.*

(7) The sanitary yellow box that brings your tooth brush *clean,* untouched by any hand since it left our sanitary factory—another big step in advance — *originated by the Pro-phy-lac-tic Tooth Brush.*



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1913
Vol. XVIII. No. 3

FALL PLANTING NUMBER

FLOWERING SHRUBS HERBACEOUS PLANTS
BULBS FRUITS

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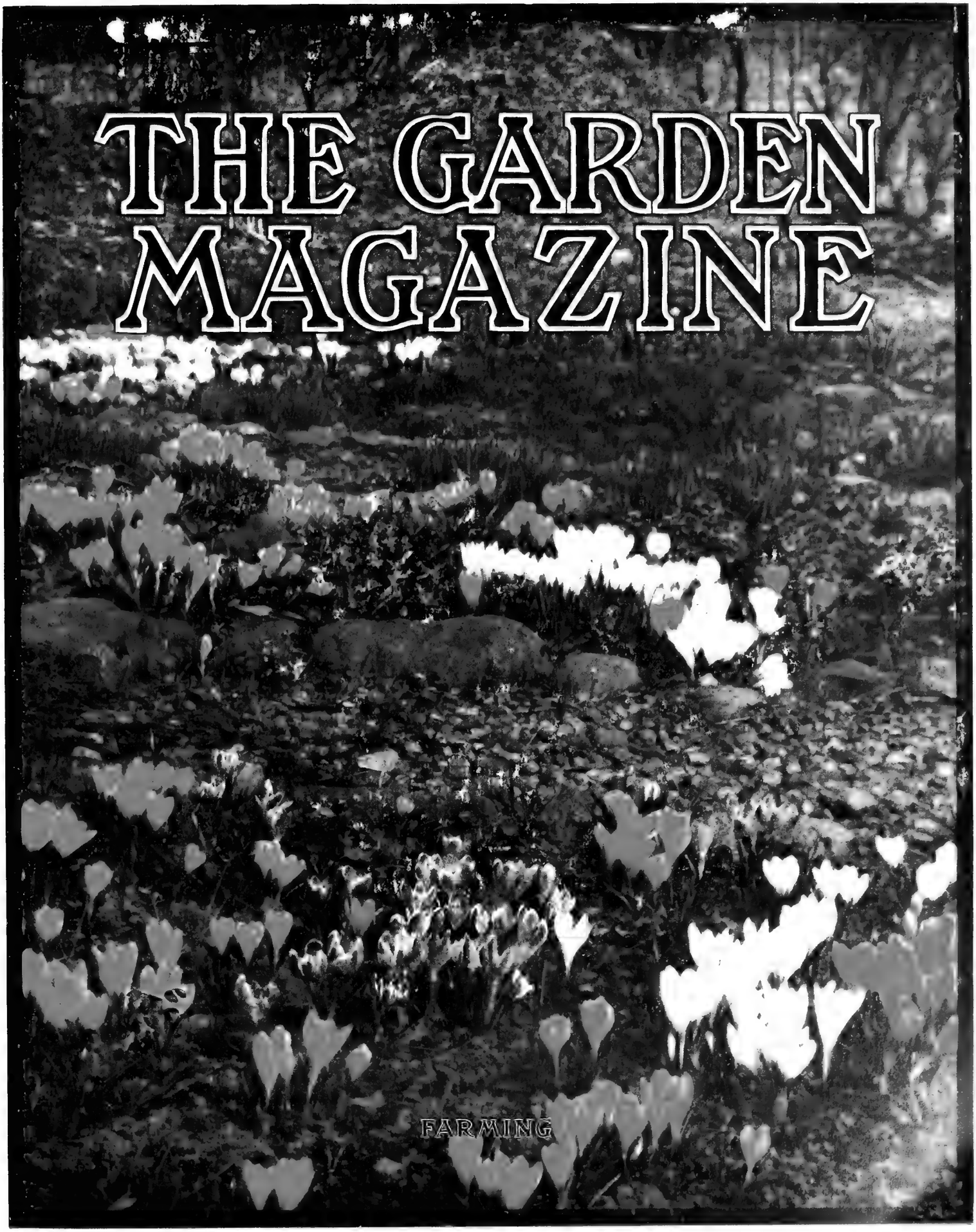

COUNTRY LIFE IN AMERICA

DOUBLEDAY, PAGE & CO.
Chicago GARDEN CITY, N. Y. New York

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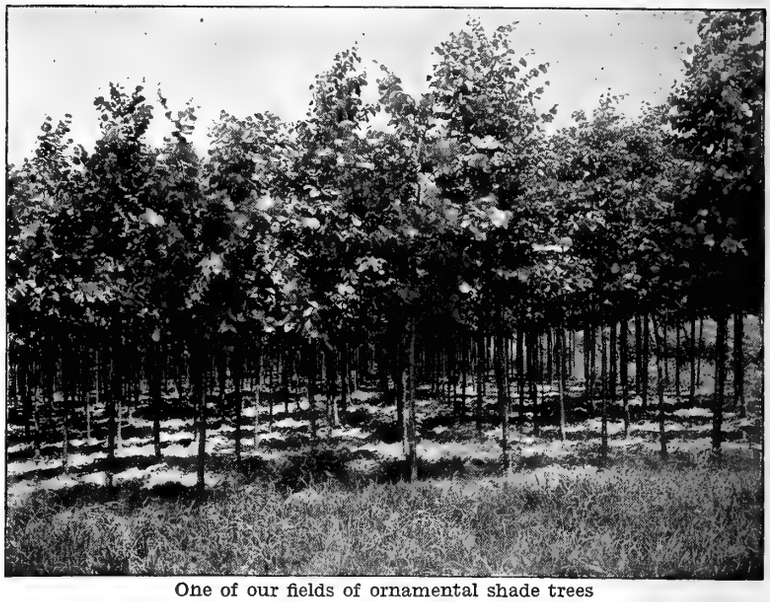
BOBBINK & ATKINS

Autumn Planting

OUR Collections of everything necessary for Autumn planting were never more extensive and in finer condition than this year, placing us in a position to fill orders of any size. By planting in the fall a season is saved, as when the spring arrives the roots are already established and the trees prepared for results.

We offer the following in the finest grades:—Ornamental, Deciduous, Standard and Weeping Trees—Flowering Shrubs—Hedge Plants and Vines—Ordinary, Trained and Dwarf Fruit Trees and small Fruits — Hardy Old-Fashioned Flowers and Bulbs — Our New Hybrid Giant Flowering Marshmallow.



One of our fields of ornamental shade trees

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A visit to our Nursery is advisable. Ask for our catalogue No. 25

OUR LANDSCAPE DEPARTMENT PLAN AND PLANT GROUNDS AND GARDENS EVERYWHERE

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BILTMORE NURSERY, located away up in the mountains of Western North Carolina, has succeeded in giving an individuality to every specimen it grows. The location of the nursery gives it many advantages. Painstaking care and scientific cultivation enable the nursery to offer splendid specimens of practically every plant and flower grown—specimens that will grow for you, wherever your garden is located.

You need not speculate as to what you will receive when you order trees, shrubs or plants, for Biltmore Nursery has prepared a series of books concerning its product which give accurate descriptions and perfect illustrations of each specimen. These books are sent free of charge to persons seriously interested in flower culture.

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LAWN GRASS SEED

If you desire a perfect lawn, use our "Special" Evergreen Lawn Seed.

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Information about the selection or care of dogs, poultry and live stock will be gladly given.

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Save Our Native Birds

You can keep native birds about your place many weeks later than usual by setting out

The Dodson Sheltered Food House for Birds

and you will save the lives of many birds by so doing. It is a fact that birds do not *freeze* to death—they *starve* to death. Many native birds will remain North all Winter if they get plenty of food. This is true of Robins, Thrushes, Bluebirds, Downy Woodpeckers, Flickers, Nut Hatches and many other birds.

This Shelter-Feeding House should be set out right now—for the birds' sake.

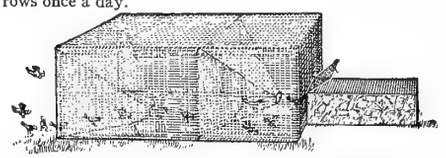
Built of clear, white pine—24x24x18 inches. Price with 8 foot pole, $8.00 f. o. b., Chicago—with copper roof, $10.00. A smaller Shelter and Feeding Table (different design) with 8 foot pole, $6.00—with copper roof, $7.50.

Trap For Sparrows

You can get rid of English Sparrows—the pests that drive away song birds.

The Dodson Sparrow Trap

is catching thousands of sparrows. Used all over America. Works automatically all the time. Remove sparrows once a day.



This is the Dodson Sparrow Trap. It catches as many as 75 to 100 sparrows a day. Made of tinned wire. Size, 36 x 18 x 12 inches. Price, including receiving box, $5.00 f. o. b., Chicago.

For illustrated folders about birds, bird houses, shelter and feeding houses, or for any information on the subject of native birds write to The Man The Birds Love—address

JOSEPH H. DODSON
1209 Association Bldg., Chicago, Ill.
(Mr. Dodson is a Director of the Illinois Audubon Society)

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that make a horse **Wheeze, Roar,** have **Thick Wind** or **Choke-down,** can be reduced with

ABSORBINE

also any Bunch or Swelling. **No blister, no hair gone,** and horse kept at work. Concentrated—only a few drops required at an application. $2 per bottle delivered. **Book 3 K Free.**

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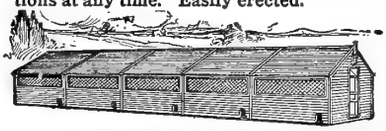
Five-Section Poultry House—10x50 ft.

Sanitary, durable, up-to-date—made of red cedar, clapboarded outside, interior sheathed. Made in 10-ft sections, each fitted with roosts, nests and fountain. Open fronts, with canvas-covered frames. You can add sections at any time. Easily erected.



First Section $75.00
Additional Sections $60.00 Each

No. 0 Colony Laying House—for 12 hens Fitted complete with nests, fountain and feed trough. Sanitary—easily cleaned. One man can easily care for several hundred birds. Nicely painted—set up in fifteen minutes. A comfortable year-round house. In stormy weather the run may be covered, giving a protected scratching room. Size, 10x4 ft., 5 ft. high.

$20.00

Send for catalogue.

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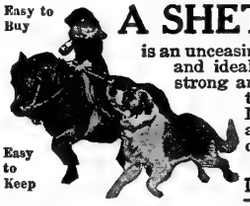
A SHETLAND PONY



Easy to Keep

is an unceasing source of pleasure. A safe and ideal playmate. Makes the child strong and of robust health. Highest type—complete outfits—here. Inexpensive. Satisfaction guaranteed. Write for illustrated catalog.

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Large Berkshires at Highwood

We have for sale service boars, brood sows and pigs all ages. These are sired by Berryton Duke's Model, the boar that headed the first prize herd at the Royal in 1909, Highwood Duke 75th, a half brother to the Grand Champion boar at the last International, and other boars of equal merit.

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How to keep your hens laying **all** winter. How to feed and **what** to feed to produce eggs and fowls for market at a good profit. These and many other vital problems can be correctly solved by reading the timely articles in

Profitable Poultry

This monthly magazine is chuck full of facts. Edited by a practical poultryman who has made a success on his farm in the suburbs of Boston. There's no theory — but plain, truthful experiences of practical hen-men. Profitable Poultry tells how to handle and feed your fowls at lowest cost; how to cull; how to market at bigger prices; how to keep your flock in pink of condition.

Special Offer Send 25c in coin or stamps for a four month's trial of "Profitable Poultry" or send $1.00 for a year's subscription and receive **free** your choice of these books; "How to Keep Hens for Profit" or "Poultry Guide Post." Accept this liberal offer today—you'll get both pleasure and profit from each number of "Profitable Poultry."

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Successful methods of men on small acreage.

By Dr. N. W. Sanborn, now running on monthly installments in America's leading practical poultry paper. Established 1892. 44-120-page periodical; up-to-date; reliable information; tells all you want to know about care and management of poultry for pleasure or profit. Four months' trial for 10 cents.

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Money in Squabs

Learn this immensely rich business; we teach you; easy work at home; everybody succeeds. Start with our Jumbo Homer Pigeons and your success is assured. **Send for large Illustrated matter.** Providence Squab Company, Providence, Rhode Island.

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Our Home Study Course in Practical Poultry Culture under Prof. Chas. K. Graham, late of the Connecticut Agricultural College, teaches **how to make poultry pay.**

Personal instruction Expert advice.
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MAKE HENS LAY

Lots of eggs by feeding green bone fresh cut, because it is rich in protein and all other egg elements. You get twice the eggs—more fertile; vigorous chicks; earlier broilers; heavier fowls; bigger profits; cuts all kinds of bone, with adhering meat and gristle, easy, fast and fine. Automatic feed, open hopper, never clogs. Book free. **10 Days' Free Trial.** No money in advance.

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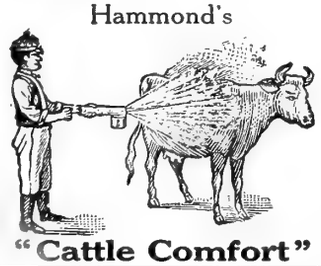
Garden City, New York

Hammond's



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Sold by Seedsmen and Merchants

"Hammond's Cattle Comfort"

Trade Mark

Keeps Cows, Horses or Mules free from Flies, Gnats and other pests. It is cheap and effective. For pamphlet on "Bugs and Blights" write to

HAMMOND'S SLUG SHOT WORKS, Fishkill-on-Hudson, N. Y.

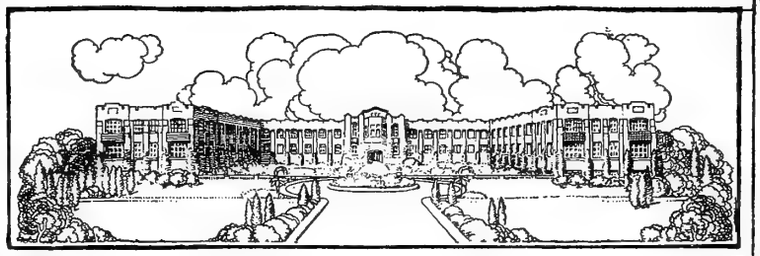
The Jersey

The Jersey gives richer milk and more butter than any other known breed, at a lower keeping cost. She does it continuously and persistently. Her milk and butter bring better prices than the product of any other dairy breed. That's where quality *does* count. Jersey facts free. Write now. We have no cows for sale.

AMERICAN JERSEY CATTLE CLUB
324 West 23d Street, New York

The Readers' Service is prepared to advise parents in regard to schools

THE TALK OF THE OFFICE



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

New Signed Edition of the Works of Mr. Kipling

ONCE in a while in the round of a publisher's activities the opportunity comes to make a book just as good as he is able to, without regard to its cost and presenting to the reader literary work with which he is proud to be associated.

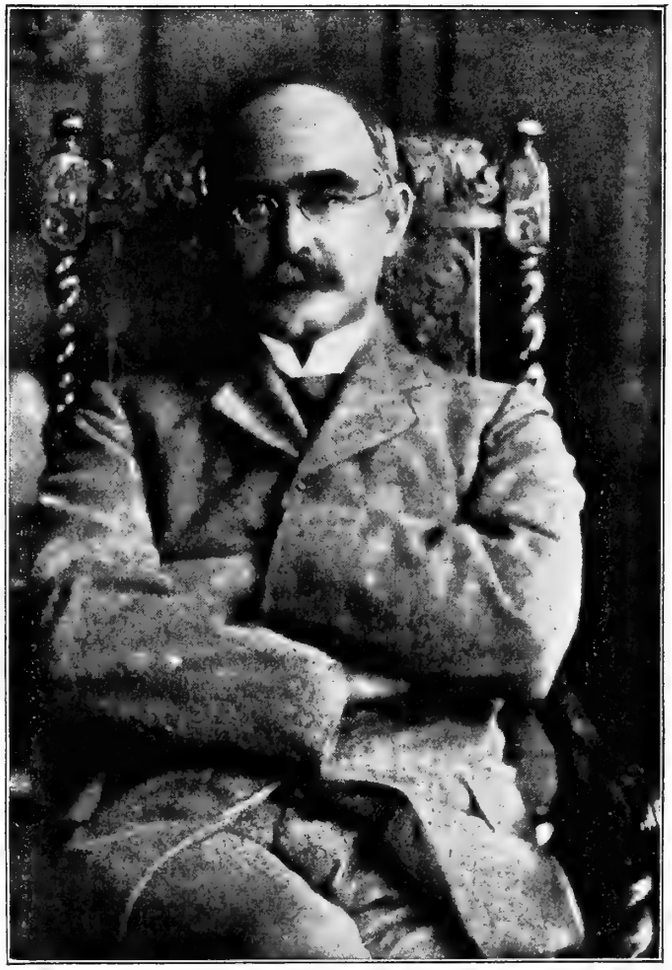
"The Seven Seas Edition" of Mr. Kipling's books, limited to 1050 signed copies, is the event of our recent publishing experience, and it is a great pleasure to us as publishers to announce its beginning on the first of November, 1913.

When the plan of the set first took shape in the spring of the present year, we enlisted the coöperation of Mr. Walter Gilliss, an associate here in the Country Life Press, to supervise the preparation and actual production of the books, and we think that the result of his experiments will delight fastidious book lovers.

The set will be one of lasting value. It will be a collection of volumes to bequeath to one's children's children; always a notable and precious possession, increasing in value as the years go by, bearing as it does the stamp of Mr. Kipling's approval and close personal association through his own written signature.

The arrangement of the literary material is the result of the author's study in casting it in the form in which he wishes it to remain. There will be added new material now collected in book form for the first time, including "Letters to the Family," etc.

Another interesting feature is the dating of the stories and verses which will add much to the value of the edition to collectors and bibliographical students. Every care has been taken to give the volume a suitable setting, and in all details the planning of the *format* has been done with the advice of Mr. Kipling, so that it represents his ideas both in its literary and general mechanical form.



A new portrait of Mr. Kipling

A special all rag laid paper has been made for the set by the Mittineague Paper Company at Mittineague, Mass. The purpose has been to provide a soft flexible paper which will hold a full black "color" and show the initial in color at the head of each chapter and on the title page, colophon page, etc., effectively. Each page of every book has the water mark:

R. K.

卐

The great importance of having a paper made exclusively of selected rag stock is readily understood when one realizes that paper made of such material lasts for hundreds of years.

The type used is a new letter modelled from an excellent French face by Pierrot, and in honor of appearing in this set is called the "Kipling" face. Clear and without fine hair lines, it is pleasant to read and strong in effect as printed on the page.

As at present planned, The Seven Seas set will include Mr. Kipling's collected work in 23 volumes. The subscriber is to have the opportunity to add to the set any future volumes Mr. Kipling decides to publish, so that he may be assured of a full and complete collection of Mr. Kipling's writings.

A list of the volumes must be reserved for later announcements, as the author is still engaged in the preparation of his plan. Volume I will be "Plain Tales from the Hills," but as this particular volume will contain the set number and be signed by Mr. Kipling, it will have to be prepared and sent to England for the author's signature, and will probably be issued after the early volumes are in the hands of the subscribers. It is expected, however, to issue two volumes each alternate month, beginning with November 1st, 1913.

The price of The Seven Seas Limited Edition will be $6 a volume net, $138 for the 23 volumes.

No order will be taken except for the entire set. A cash discount of 6 per cent. will be allowed when the payment, $129.72, is remitted with the order.

The publishers reserve the right to raise the price after January 1, 1914.

Crowds

Mr. Gerald Stanley Lee's book has been discovered and talked about. It has become what is called a "best seller." Some people (not publishers) do not speak respectfully of a "best seller" when it is fiction, but here is a serious best seller.

Write to the Readers' Service for information about live stock

Apple Varieties and Pruning

DO YOU advise the same general soil and pruning treatment for Baldwins, Newtown Pippins and Rhode Island Greenings as for the Northern Spy? If not, can you briefly summarize the main individual requirements of these three varieties?

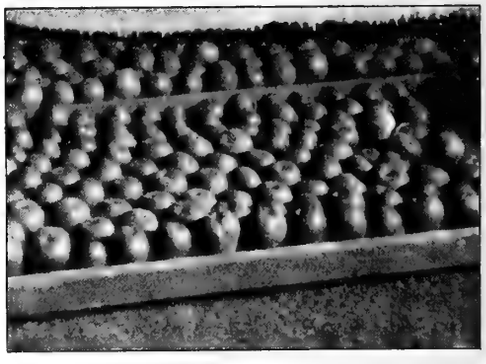
New York E. D.

———The Newtown Pippin requires a limestone soil with some clay in it, and it will thrive only where these conditions exist. It is of no use to attempt to grow it in the East outside of the Hudson Valley and the north shore of Long Island. It is grown successfully in California and Oregon where the soil conditions are as described. After the tree is well formed, the Newtown does not require much pruning. Both the Baldwin and Rhode Island Greening will do well under practically the same soil and general management. The Baldwin grows upright and needs the centre of the trees well cut out to prevent its going up too high. The Greening has a spreading habit of growth and does not require so much centre pruning. The Northern Spy requires an entirely different soil and general treatment. To obtain high color, without which the fruit is worthless, the soil should be a shale or gravel loam, quick, warm, yet carrying a good degree of moisture. On such soil the Spy will begin to bear in six years. The elevation should be high — from 500 to 1,200 feet. When planted on a deep rich clay or clay loam on bottom land the tree will grow vigorously for fifteen years without producing an apple. After the Spy tree is planted and a well formed head is established the first two years, no pruning should be done for the following six years, except to take out some cross-growing branches. Constant pruning will stimulate wood growth. With no pruning for six or seven years, fruit spurs will form and the trees begin to bear freely in seven years, after which judicious pruning may be done, taking out only such inside wood as will make too much shade. The sun must shine in and through the tree in order to color the fruit well and to obtain that is all the pruning the Spy requires.

New York. G. T. POWELL.

Storing Pears

THE storing of fruit is always a problem on small places where just enough is grown for home consumption. In many cases all the fruit will ripen at one time and the feast is followed by a famine. This can be easily avoided by gathering the fruit and spreading it out on racks; or it can be spread on the attic floor and covered with



Pears stored singly on racks in a dark room. Less than a peck was lost out of 100 bushels

paper. Apples keep much better than pears; they can be put in barrels and boxes and occasionally carefully sorted over to remove any that have started to decay.

Last year my crop of pears was in the neighborhood of 100 bushels, and out of them I did not lose a peck. I have stored them singly in racks in a dark room; I looked them over daily and removed the ripe fruit.

Another point in having good pears is not to let them remain on the trees until they are dead ripe, for they will then get mushy and loose their flavor. They also keep better if removed when they are hard. The proper time to pick pears is when the stem leaves the branch without breaking.

New York. W. C. McC.

CONTENTS

OCTOBER, 1913

SUBSCRIPTION: $1.50 a year Single copies, 15 cts.

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Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879
F. N. Doubleday, President Herbert S. Houston, Vice-President S. A. Everitt, Treasurer Russell Doubleday, Secretary

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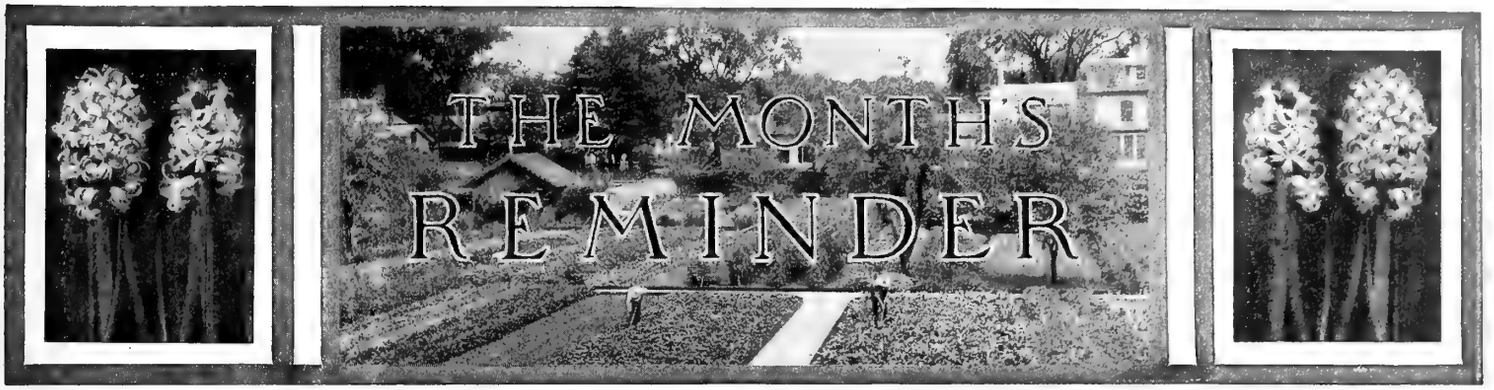
The Garden Magazine

VOLUME XVIII OCTOBER, 1913 NUMBER 3



THE FIRST thing to think of in connection with October is planting. Apple picking, cider, "nut brown ale," fox hunting, and autumn leaves make an attractive outdoor background, but the great big constructive thought is about getting things into the ground.

Like the Mississippi River pilot who made good not because he knew how the channels ran, but because he "knew where the snags were" and could avoid them, we can escape most of our difficulties by recalling at once what can *not* be planted now.

Among the trees there are the thin barked species such as birch and beech; and the fleshly rooted kinds, including magnolia, tulip tree, poplar, etc.

Of the fruits, strawberries are doubtful especially in heavy soils, and the stone fruits — peach, plum, cherry and apricot — must be avoided.

The only shrubs that are liable to injury are evergreens. Roses, too, except for the rugosa, the very hardiest climbers and H. P.'s had best be saved till spring, but for those mentioned fall planting is ideal on well-drained soils.

Of the herbaceous perennials and Dutch bulbs there is only one exception — the anemone must not be set out for it will rot. Of course the "summer bulbs" (gladiolus and the like) must not be planted now.

There are a few precautions worth noting preparatory to getting busy with the raft of material at our disposal.

Fall Planting Dangers

WET, undrained soil will upset all our calculations and probably cause failure. Therefore if your soil is not right install a thorough, permanent drainage system, instead of wasting time and material in planting.

Cold, dry winds are almost equally destructive. If they are common in your vicinity either consider yourself wholly an exception and avoid planting, or devise a shelter or windbreak.

Heavy clay soils under winter influence are likely to "heave" — that is lift the new set plants out of the ground, tearing and laying bare the roots. Here again improve conditions by lightening the soil with humus and sand, before planting *even if it holds you back a season.*

Unless you have thoroughly prepared the ground in advance, its condition may be less congenial and more prejudicial to good growth than if you left it until spring plowing; spading or harrowing meanwhile, whenever possible.

What Can Be Planted and How

DO NOT neglect to learn these general fall planting rules now.

(1) For trees and shrubs dig the hole large enough to take the roots without crowding, and deep enough to set the plant about one inch deeper than it was before.

(2) Balance any possible root injury by cutting back the top, *except* in the case of spring blooming sorts, on which the flower buds are already formed, e. g., forsythia, lilac, fringe bush, etc.

(3) Mulch newly planted specimens to prevent excessive evaporation by winter winds.

(4) Be sure that the soil is sifted and firmed closely around the root system.

(5) Don't transplant any thing in which the season's growth has not definitely ceased.

(6) Cut back berry and rose canes that they may not be whipped about by the wind, but leave sufficient wood to prune again in the spring, in case an early or late frost should kill back part of the old growth.

(7) In buying nursery stock, select if possible that grown near by or north of you rather than much farther south except when the Southern nursery is on a high elevation, as most are, however.

(8) Never let roots dry out entirely, but on the other hand do not water continually so as to stimulate a new growing period.

(9) Don't try to get results with poor stock. Buy the best, even if you only get one half or one quarter as much.

Planting Bulbs

BULBS may be planted in four ways each of which gives results out of all proportion to the work involved:

(A) *Naturalized in the grass* — the most permanent and least troublesome method. Throw the bulbs by handfuls, scattering them as though by the wind, and plant each where it lies making the hole with a dibble and surrounding the bulbs with a handful of sand to prevent rotting.

(B) *Semi-naturally in the border*, using similar methods, but aiming for irregularity of grouping and season, by planting at varying depths and spacings.

(C) *In formal designs and masses* — the city park style. Here uniformity is everything. Plan, level and mark out the bed accurately. Affix a guide to the dibble to insure planting at a certain depth, and choose bulbs of uniform size and apparent vigor.

(D) *In pots, flats and bulb glasses.* For six to ten weeks develop simply a root growth (best temperature 40 degrees F.); then start the foliage and stem growth (50 degrees F.); for the most and best flowers keep no higher than 60 degrees F., but for quick temporary effects raise to 70 degrees F.

Daffodils, freesia, Roman hyacinths and tulips give really best results only in soil. Others can be matured in water alone, although the addition of a little prepared plant food will help. To insure tall, vigorous spikes and leaves, cover the shoots with paper cones for a week or two, leaving, however, a hole at the top for the admission of some light.

If you want detailed suggestions about just what to plant, look in GARDEN MAGAZINE, October 1906 (p. 118), 1907 (p. 128)

and 1908 (p. 117) for the sort of planting tables that really help.

The following shrubs are especially worth planting, because they bear bright, attractive fruits in October and occasionally all winter, when garden colors are at a premium: Chokeberry (*Aronia arbutifolia*) red; *Photinia villosa*, red; *Ribes fasciculatum*, red; black haw (*Viburnum prunifolium*), black; coral berry (*Symphoricarpos orbiculatus*), red; and snowberry (*S. racemosus*), white.

As To Vegetables

THE only vegetables to think of planting are rhubarb and asparagus, unless you can keep the hotbeds warm enough to raise more lettuce, radishes, etc.

But don't delay your preparations for storing mature crops, providing you haven't a cool, but frost free cellar. A concrete-brick root-cellar is most certain and need not be costly; or you can dig pits two feet or so deep, bury the roots in sand, and cover with soil, straw or leaves, and (if you expect very severe weather) a coat of manure.

Affairs in General

DON'T waste any of the leaves whatever you do, they make good bedding in the stable, good litter in the poultry house, a good mulch along the borders, excellent compost, and a valuable constituent of potting soils, after rotting two years or so.

Young fruit trees may have to be protected from mice and rabbits. If so do it now with wire netting, tar paper or strips of veneer made especially for the purpose.

The first dormant pruning can be done as soon as the leaves fall. The sooner it is over, the sooner you can clean up all the litter and burn it together with the garden rubbish — thus destroying many insects and the possibilities of more.

House plants plunged outdoors must be brought in if not already taken care of. But accustom them to the indoor heat gradually. A sudden high temperature is almost as harmful — although in a different way — as an equally sudden cold snap.

There is still time to create a lot of improved conditions around the grounds. Where is your most travelled winter pathway — to the stable, chicken house, back gate? Well, is it cement, or well rolled ashes — or just mud? Some cubic yards of home laid concrete will make easier snow shovelling, infinitely better walking, and highly increased healthfulness.

Lawns can still be seeded, providing, as already emphasized, the ground is drained. By mulching lightly after the ground has frozen, the possible dangers of this rather late lawn making can be largely avoided.

Carnations, asparagus and other greenhouse crops are about ready for trellises as soon as you have cleaned up everything outdoors.

But don't forget that this outdoor work includes one of these treatments of heavy, sticky soil:

(1) Add lime and work it in—up to thirty bushels to the acre.

(2) Dress heavily with manure to leave all winter — all you can get!

(3) Spade or plow up, and leave as rough as possible, in order to let the frost get in its loosening, pulverizing work.

Finally before you go inside and shut the door on the winter weather clean up all the tools and put them away. You might even take an inventory so that when the ordering season comes around you will know just what you need.

News Notes and Comments

HOW TO DO WITHOUT CULTIVATION

FEW places offer better opportunity for the exercise of economy and ingenuity than the small vegetable garden. The writer of the following letter is on the track of an admirable and useful "wrinkle." He says:

"I would like to know if there is any objection to thoroughly spading the soil and then, after planting is done, covering the whole with a good layer of manure to remain on top and take the place of frequent cultivation?"

The dust mulch resulting from frequent shallow cultivation is good, but a mulch of manure is indeed still better. In addition to conserving the moisture in the soil it will, with every rain, supply additional plant food right where the roots can get it most easily. But it will succeed only under certain conditions:

1. The manure used must be thoroughly rotted or it will heat, perhaps injure the plant, and probably dry out the soil faster than the absence of any mulch would do.

2. It must be kept loose so as to break the capillarity of the soil, reduce evaporation, and thus accomplish the main purpose of all mulches.

3. Some provision must be made against the growth of weeds. An occasional hand pulling should suffice; but the ground must be kept quite clean before the mulch is applied, and the reseeding of any weed prevented at any cost.

4. Of course the mulch cannot be applied until the seedlings are well developed — say six inches high. Nor would it be desirable where a bulbous or root crop such as onions, beets, turnips, radishes, etc., were growing. In other words, its use will be greatest among the larger annuals and all perennial crops such as asparagus, rhubarb, berries, corn, cabbage, beans, tomatoes, etc.

5. Finally, the soil must be naturally loose and mellow or it will become compacted and impervious and require cultivation notwithstanding the use of the mulch.

NEWEST SWEET PEAS OF MERIT

AT THE meeting of the American Sweet Pea Society, held in Boston, July 12 and 13, Professor A. C. Beal, as Chairman of the Trial Committee, reporting on the new varieties, gave the following as among those of special merit:

"May Campbell, marbled carmine on cream ground; Charm (Fordhook Fairy), white, suffused with delicate blush lilac; Orchid, rich, deep lavender suffused with pink; Dobbie's Scarlet, brilliant scarlet, Lady Evelyn Eyre, a very large blush variety; Lila, a distinct variety, standards faint lilac, deeper at midrib, wings very light primrose; Orion, crimson; Mrs. Cuthbertson, rose pink standard and white flushed pale rose wings; Walter P. Wright, bluish lavender.

"At the present date we would report that Inspector is better than Melba, and that both are better than Earl Spencer. The former shows a good percentage of doubles. Dobbie's Scarlet appears to be the best of the bright scarlets, although Red Star is good. Margaret Madison is doubtless better than Flora Norton Spencer. Leslie Imber and Southcote Blue are no better than the latter. Helen Pierce Spencer, May Farquhar, Lord Nelson Spencer and Millie Maslin Spencer are good, but we will report on them later. Loyalty, Bertie Usher, and Blue Jacket are blue striped varieties. Cyril Unwin resembles Arthur Green."

WATERING IN SUNSHINE

RECENT investigations in Europe offer some explanation of the long-standing prejudice against applying water to growing plants when the sun is shining. It appears, as a result of these investigations, that there is, under certain conditions of soil, a possibility of injury to the plants, more particularly on a clay soil containing a large proportion of organic matter. When water is added to such a soil and in a lesser degree to other soils "a considerable quantity of heat is disengaged. If, therefore, water, be added to the soil, dried and baked by the sun, the temperature of the soil already high is raised yet more and may bring about serious damage to the roots." This increase in temperature may amount to as much as 20 degrees. It is curious to note in connection with this, that the greatest danger exists in the best garden soils.

Two-Year or One-Year Apple Trees?—J. R. Mattern, Pennsylvania

THE CASE IS PRESENTED FOR THE YOUNGER TREE—HAS THE OTHER SIDE ANYTHING TO SAY?

IN THE spring of 1913 a man who has two hundred acres of orchard now and who is planting a hundred acres more told me that he was using only one-year trees. He said that it made a difference of from ten to thirty per cent. in the net earning capacity of your orchard whether you started it with one-year or two-year trees. If this man is correct in his position there are a great many planters who are badly wrong in their present methods.

It must be understood exactly what are one-year and two-year trees. Most nurserymen who do their own propagating bud or graft little trees of two years' growth from the seed. One-year apple trees, then, are trees whose roots are three years old and whose tops are the growth from a bud during one season. And two-year trees are these same one-year trees kept in the nursery for an additional twelve months.

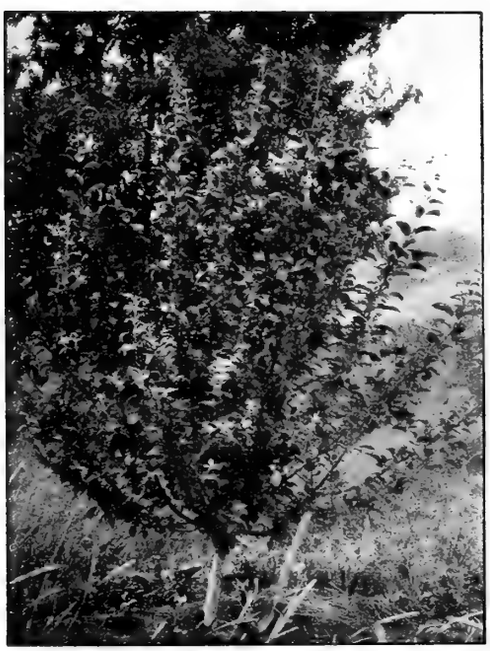
Commercial orchard and home planting requirements are not much different. For either purpose trees should (1) cost as little as possible; (2) cost the least to plant; (3) grow fast and get big quick; (4) begin to bear soon; (5) bear as much fruit as possible right along; (6) produce the best possible quality of fruit; (7) be properly shaped, which means that the heads will not split under their loads of fruit.

The trouble with two-year trees begins in the nursery. In the latter part of the summer, if one-year trees are not to be sold as such, the nurseryman cuts off the whips about four feet from the ground. The next summer he keeps pruning away at the growing trees, cutting off all the side shoots, and forcing the growth up and up—to make them "big two-year trees." When these trees finally reach planters all the lower limbs have been removed, and the trees have been given a tendency to grow high all their lives. In the orchard these trees will send out frame limbs four, six, even ten feet from the ground, depending on the habits of growth of the varieties. A Spy or a Stark tree will start very high and keep going higher, while a Yellow Transparent or M. B. Twig will start lower, and grow more spreading. Even the lowest of such trees, however, will be difficult to climb without a ladder when they are fifteen years old.

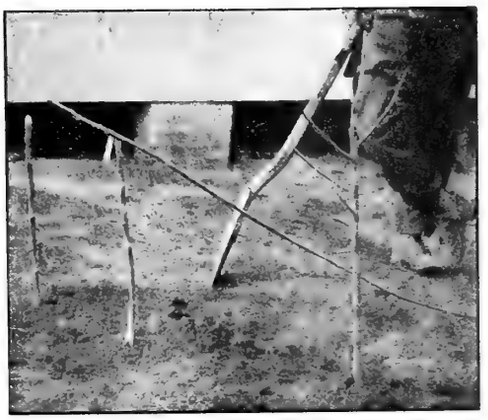
At left a 1-year peach tree; in middle, 2-year apple tree; right, 1-year apple tree. Notice that the head of the 2-year apple tree is formed already and is entirely too high, also that the branches that must form the frame of the future orchard tree all come out in a group

If these same trees had been planted in the orchard when they were only one year old, and at that time cut off about twelve or eighteen inches high, their heads would have been started from one to two feet from the ground. Even more important, the side limbs which later form their frames could have been selected intelligently and made to shape the heads properly. The trunks of two-year trees cannot be cut off as the trunks of one-year trees can nor can the heads of two-year trees be shaped with anything like the advantage of the heads of one-year trees. It may be urged that not every orchardist will prune his one-year trees carefully so as to properly locate their head limbs. But that is his lookout. He has the opportunity with one-year trees; he does not have it with two-year trees.

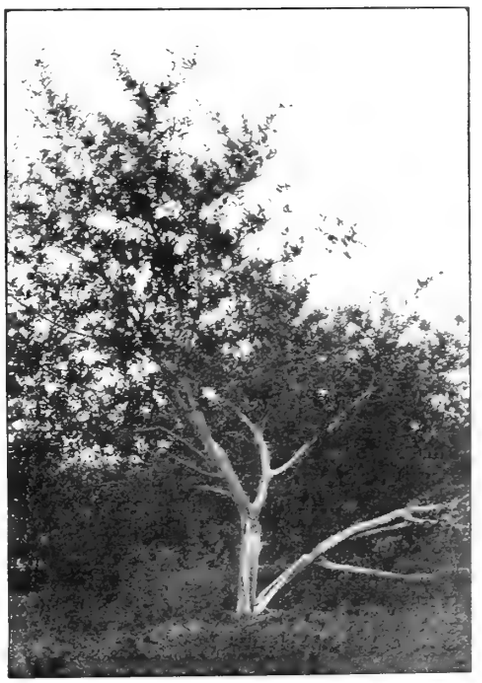
To determine how sure a tree is to grow look at the roots. The roots of one-year trees are smaller, shorter, finer and more fibrous than those of two-year trees. When the trees are dug, fewer of these short, fine roots are broken than of the long, ropy ones, and a less proportion of the tops of one-year trees have to be pruned off than of two-year trees, to balance the amount of roots destroyed in digging. For planting anywhere north of the cotton belt, roots are what count in making a tree take hold and thrive. For planting south of that latitude, roots may be pruned severely, but in the north the trees need every root and rootlet that they ever grew. With all the roots, there is far less shock to the trees. And it is because of this and because it is far easier to get the dirt packed tightly around the roots of one-



A 1-year which has had two and a half season's growth. It is properly headed. In the summer of 1911 when three years old it set nine apples

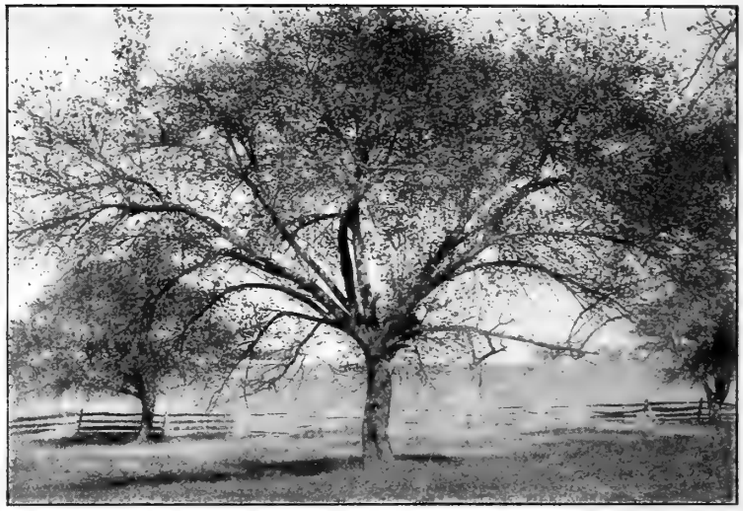


Trees shown above as they should be planted. The long whip top leaning on one stub is what was cut off the 1-year apple



The result of the crotches which it is almost impossible to avoid having when 2-year trees are planted

To remedy the moon-climbing habits of old "two-year" trees. All the upward growing limbs are cut off every year till the new growth is forced to droop.



How a 2-year tree heads about six feet from the ground. The frame limbs all coming from one height on the trunk. This tree is a low growing variety.

year trees, that they take hold in their new homes quicker than two-year trees, are better nourished and grow faster from the start. Of course there are differences, but the general statement is true proportionately, not only of apples, but of other fruits. In the matter of certainty of growth, the best I ever saw done with two-year trees was to get 815 to grow out of 900 planted. With one-year trees last year in one orchard 1,100 one-year trees were planted, and 1,097 of them are alive and thriving now. Soils and varieties had nothing to do with the comparative results.

As to price, one-year trees, four to five foot size, which is the best grade, are quoted at 40 cents each or $32 a hundred, and two-year trees of equal grade at 50 cents each or $40 a hundred. In many catalogues, quotations on two-year trees are omitted on two thirds of the varieties. Freight charges and cost of handling one-year trees are lighter than with two-year trees by at least 20 per cent. They always cost about one fourth less than two-year trees to plant and prune during the first season, after which the cost of care is about equal for the two classes.

Early bearing probably is the most vital requirement of all. On account of their taking hold in earnest more quickly, one-year trees do much more growing than two-year trees during the first few seasons. Here again varieties differ, and it would not do to compare a slow-growing sort with a fast growing one. A two-year Delicious tree will outgrow a one-year Grimes — but a one-year Delicious planted at the same time will be ahead of the two-year Delicious. At four or five years one-year trees can be made a third bigger than two-year trees planted at the same time.

Which class will bear the sooner? In this matter experience seems conclusive. The great fruit-growing section of New York is noted for its advocacy of older trees for planting — trees two years old and even three years old. C. A. Green, of Rochester, has put himself on record many times saying that apple trees never are expected to begin bearing before they are eight or nine years old, nor to produce fruit to any commercial extent till they are ten or twelve years old. This is the gist of the opinions of those who plant two-year trees. Part of this excessively long wait for fruit is due to the nature of the varieties usually planted in New York — Baldwin, Spy, Greening, Hubbardston, and other old standard sorts noted for tardy bearing. In the West, in Pennsylvania, New Jersey, Maryland and other states where one-year trees are the rule, the chief varieties — Stayman Winesap, Winesap, York Imperial, Yellow Transparent — are by nature earlier bearers. But in New York, with two-year trees, the waiting period is shortened only a year or two even when early bearing sorts, such as McIntosh Red, Stayman, and Delicious, are planted.

But it is different with one-year trees, in New York or Pennsylvania or Maryland or any other section. The orchardists of the West make Yellow Newtown and Spitzenburg, among the tardiest bearers of all, begin to produce fruit when the trees are four years old. At seven and eight years these orchards are producing big commercial crops. None but one-year trees are planted in the West. It is the same in the East with other varieties. W. J. Lewis & Brother, of Pittston, Pa., have twenty acres of Stayman planted on the hills of Luzerne County. These trees were five years old in the spring of 1913. In 1910 Mr. Lewis showed me these trees, and that year they had set as high as sixty apples each. They had on an average of thirty or forty apples that year. Most of this crop was removed on account of the tender age of the trees. Last year these little trees set three times as many apples as they did the year before — that is, every four-year old tree was bearing upward of a hundred apples. Alongside these one-year trees Mr. Lewis planted sixty two-year trees at the same time, and last year the whole sixty of these trees did not produce a hundred apples! Another example of how one-year trees bear very early is the orchard of W. Scot Whiteford & Sons, Whiteford, Md. In 1911 they had about a thousand one-year trees which then had been planted five and six years. That year the five-year old trees averaged two bushels each, and the six-year old trees averaged five bushels each. Nearly all are Stayman.

Aside from the advantage of low heads, which one-year trees have and two-year trees such as you buy on the market to-day can not have, the former has other important points of superiority. The development of fruit buds can be forced by the same treatment that shapes the heads properly, and bearing wood can be distributed throughout the head. On two-year trees the fruit is borne mostly on the "surface" of the trees. Varieties differ in this respect, as, for instance, Stayman has a habit of setting fruit all along the limbs, and Rambo sets nearly all its fruit out toward the ends of the limbs, nearly like a peach tree. The formation of fruit buds can be forced or trained and directed to a marked extent, however, and the more even distribution of fruit which it is possible to get on one-year trees enables them to carry bigger crops of fruit without breaking.

Even distribution of fruit throughout the heads of the trees effects its quality considerably because it occurs only in connection with a large amount of bearing wood well scattered through the trees, and round, low, open heads. To say this is to describe one year trees. Under such conditions the apples can be thinned so that none rob others near them, and so that the sun comes in the top to every leaf and twig and apple. The two-year trees, with their canopy of leaves, have long stretches of bare limbs which are pretty completely shaded. The low, open, gradually grown heads of one-year trees require a half less work to prune them each year, can be sprayed much more thoroughly, and from them the fruit can be picked in less time.

Lengthening the Tulip's Flowering Season

By J. H. Perry, Massachusetts

BULBS THAT ANY AMATEUR CAN GROW SUCCESSFULLY—HOW TO LENGTHEN THE SEASON OF BLOOM AND HOW TO INCREASE YOUR FAVORITE VARIETIES

TULIPS make an excellent first crop for flower beds, which are not occupied permanently by other plants. But like other spring flowers, the tulip comes quickly and quickly is gone. The season we cannot stay, but with a little thought and planning we may lengthen the period in which the tulips are with us and make them last, in the latitude of Massachusetts for instance, from the latter part of April till the early part of June.

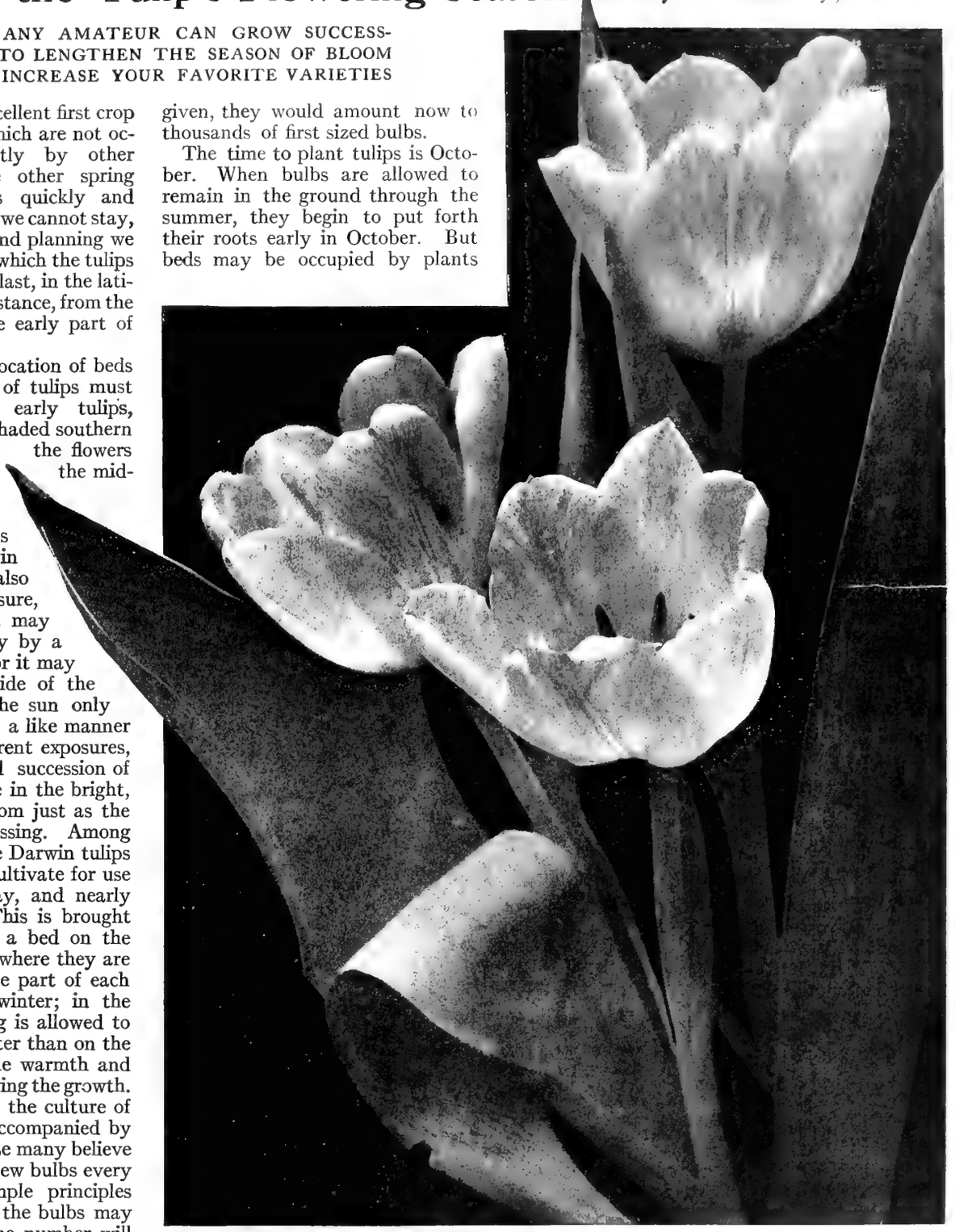
To accomplish this, the location of beds and the different varieties of tulips must be considered. For very early tulips, select a bed close to the unshaded southern wall of the house. Here the flowers will begin to open about the middle of April.

But before the tulips are gone in this first bed, tulips should begin to blossom in bed number two. This also may have a southern exposure, but not near the house; it may be shaded part of the day by a neighboring tree or shrub; or it may be on the east or west side of the piazza, where it receives the sun only during half of the day. In a like manner by selecting beds with different exposures, we may have a prolonged succession of May flowering tulips, those in the bright, sunny bed beginning to bloom just as the last of the early tulips are passing. Among the May flowering tulips the Darwin tulips are preëminent. These I cultivate for use especially on Memorial Day, and nearly every season I succeed. This is brought about by putting them in a bed on the northeast side of the house where they are shaded by the house a large part of each day during the fall and winter; in the spring also the leaf covering is allowed to remain on this bed much later than on the others, thus keeping out the warmth and holding in the frost and delaying the growth.

It is a common idea that the culture of tulips, year after year, is accompanied by considerable expense, because many believe that it is necessary to buy new bulbs every year. If certain very simple principles are followed, the quality of the bulbs may be fully maintained, and the number will increase, for they multiply like other bulbous plants.

From fifty bulbs of Pottebakker Yellow bought more than fifteen years ago, I have had flowers every spring since, and so with others. But not only has the quality been maintained, but the bulbs have multiplied many times. If all the bulbs which have come from the original fifty Pottebakker Yellow had been saved and treated in accordance with the principles about to be given, they would amount now to thousands of first sized bulbs.

The time to plant tulips is October. When bulbs are allowed to remain in the ground through the summer, they begin to put forth their roots early in October. But beds may be occupied by plants which continue to blossom through October; in that case the tulips may be planted as late as November. It is not necessary to follow the principle of the rotation of crops in tulip culture.



Tulips give the greatest variety of color of all the bulbs and by planting the early and late kinds bloom can be had over the longest season (Rose Luisante)

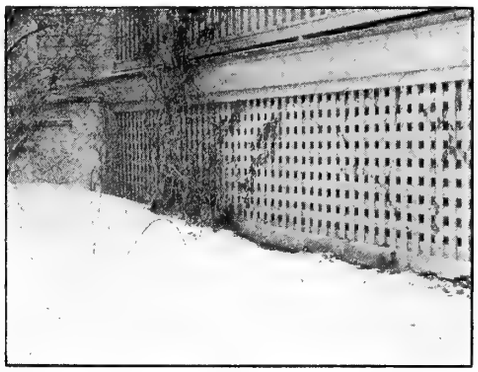
While a bed of mixed tulips is better than none at all, nevertheless such a bed is lacking in harmony and design. The whole has a chance effect. Not so when a bed is planted with one variety. The effects of harmony, uniformity, color, and mass are concentrated. A bed made up entirely of Kaiserskroon is very effective. Or if you think that a bed of a single kind may be wanting in variety, it is possible to arrange the tulips so that the bed shall be, as it were, a great flower on your lawn, the centre of one color and the border, rep-

resenting the petals of the flower, of one or more other colors. Perhaps you would like to work out a design representing a beautiful rug. In many ways you may put the tulips together so that there will be added to their bright colors the beauty of design and order. To work out various patterns that may be made with your tulips becomes very fascinating, and it is restful to the mind, for it occupies without taxing. In arranging pattern beds it is necessary to consider the height and time of blooming of the different tulips used, if the design is worked out perfectly. For such arrangement the early tulips are much better suited than the May flowering ones.

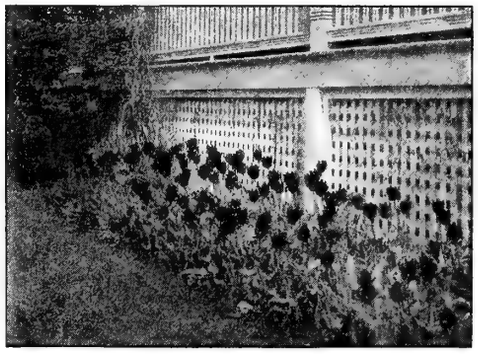
After the planting comes the covering of the tulip beds. The shade trees along the city streets drop their leaves about the time for the covering of the tulips, and so I have used leaves for this purpose. A covering three or four inches thick is quite sufficient. But leaves will blow about unless held in position. Wire netting, spread over the leaves, keeps them securely in place and is tidy in appearance. The wire netting is held in place by wooden pegs or iron spikes. But this leaf covering must be removed in the spring as soon as the tulip spikes begin to appear above the ground, else it may force them to bend and twist.

In the growing of tulips there is great satisfaction in that it is not necessary to fight insects. So far as my experience of twenty years goes, there is no bug for the tulip. It gets ahead of the weeds also, so rapid is it in its growth and development.

As the blooming season closes, there comes a most critical time in the growth of the bulbs. Upon the treatment your tulip bed receives then, will depend largely the strength and quality of the bulbs the following season. The ripening of the seed in the seed pod at the top of the stalk exhausts the bulb in the ground. Break off the seed pod of every tulip as the petals fall. The strength and vitality are then retained and stored in the bulb. If you



Late snows do not injure the tulip spike which pierce through in spring



The above bed as it looked on May 19th *T. Gesneriana*, var. *spatulata* at back, La Merveille in front

wish to keep your tulip bulbs, year after year, without deterioration, this practice of breaking off the seed pods must be attended to most scrupulously. Also if you cut the flowers, be careful to cut as few of the leaves as possible, for they are the laboratories in which is prepared the food for the bulbs. Bulbs cannot be deprived long of their food supply and thrive.

The seed pods being removed, you may then watch the ripening of the bulbs. At this stage you are likely to become impatient, nevertheless wait until the tulip leaves turn yellow and partially dry up before you disturb the bulbs. This, I think, is much better than to dig them up while they are still green, and to bury them temporarily in the garden. At last the bulbs are taken up, each kind being kept by itself. This is the harvest time for the tulip lover who treats his bulb aright. His is the joy of the husbandman who sees his possessions increasing. The small bulbs, treated as the larger bulbs are treated, will grow and become large bulbs in a year or two. Working in this way, you may increase your stock of bulbs, and hence the size and number of your beds.

As the bulbs are taken from the earth with the stems attached to them, they are spread out loosely in some dry, shady place. If at this stage a bulb becomes soft and shrivels, it is because it was removed from the ground too soon. Though it will become hard again on drying, it will be smaller and wanting in vitality. Let this experience teach you the proper course of procedure for the next year. Also, now and then, you may find a bulb which is moldy and soft, and from which layers break easily, leaving moist, slimy surfaces. Such are diseased. Remove and destroy them, lest the disease be communicated to others.

When the bulbs are thoroughly dried so that they easily separate from each other and from the root clump, put them in open receptacles, like small peach baskets lined with paper, not more than two deep, the large and small in separate baskets, with the variety and number of bulbs marked on each basket. The bulbs are then put away in a dry place for the summer. The upper part of the house is generally better than the cellar, for there may be moisture enough in the latter to cause them to mold. Also they must not be left where the hot sun will strike them, even during a part of the day. Under its action they will become soft and lifeless. The tulip bulbs will then be ready for planting in October. Knowing the number of each variety, you may at your leisure plan the arrangement of them in your beds for the next season.

Darwin's tulips bloom with the lilacs

Leaves as a mulch do not cause rot

Planning and Planting the Perennial Border — By Henry Wild, Connecticut

THIS SEASON'S OPPORTUNITY TO MAKE A BORDER THAT WILL GIVE FLOWERS ALL THROUGH THE SEASON AND GROW BETTER AS TIME PASSES — A MODEL PLAN

MORE than half the fun of a garden lies in its making, with the pleasure of anticipation to urge one on to something really worth while. Then there is the selecting of your favorite plants and the knowledge gained by trying out new ones, which is an attraction in itself.

October is the best time of the year to make a start in the hardy border, especially as to the proper preparation of the soil itself. If you would have results you must have the proper soil conditions, and it is the shirking of this detail right now that accounts for a host of failures or disappointments. Therefore I strongly urge "trenching." Sounds like hard work, eh? Well perhaps it is; but just consider for a moment. Many of the plants, such as peonies, lilies, delphiniums, etc., are to remain in the same place undisturbed for several years and if conditions are right, will increase in beauty. Would you plant an orchard on unprepared land? The cases are analogous.

To trench a border, dig out the soil to a depth of two feet and three feet in width, wheeling the lifted soil to the far end of the border. Then take off the top soil of the next section, placing this also at the far end of the plot, but separately. This will give a clear start for stirring up the bottom of the first trench and allow the turning over into it of the second, to which should be added well rotted manure, partly decayed leaves or other garden compost. Place the top soil of the third section on the surface of the soil thus turned over into the first trench. Continue this method until the digging is completed, filling in the last trenches with the material taken out at the start.

The ground should now be given several days to settle and a dressing of sheep manure or bone meal raked in with the levelling of the surface. This will ensure a border in which the roots of the plants will go far down to find moisture instead of running along the top, as is the case when the soil is shallow and resulting in the need of artificial watering with every dry spell.

If a hedge of privet, arborvitae, or hemlock is used as a background, or as a means of adding privacy to the border, it is advisable to leave a space of at least three feet between the hedge and the garden. This will serve as a path and prevent the roots of the hedge from robbing the border to a great extent.

If space be available, a background of shrubs, such as lilacs, spireas, altheas, etc., with a few evergreens planted in a broken outline, form an ideal setting and assist in giving the border a natural appearance and charming effect.

Foxgloves, aquilegias, helianthus, etc., mingle well with the shrubs and, when planted informally, present the appearance of having escaped from the border and lend just that touch to the planting that suggests the semi-wild.

The mistake often made is that of planting too closely together. Peonies may be given three feet. Boltonias, helianthus, *Pyrethrum uliginosum* that grow erect yet have broad heads of bloom, can be given from two to three feet. Phlox, delphiniums, iris and others of similar habit eighteen inches; alum root (heuchera), alyssum, the dwarf campanulas, etc., require at least a foot.

When plants are received from the nursery, the top growth has all been cut off and unless one is familiar with the habits of growth, many kinds will be crowded the first season unless plenty of space be given. The best plan, therefore, is to give extra room to the strong growers, using biennials and such bulbs as narcissus, Darwin and May-flowering tulips and *Galtonia candicans* between them, all of which add to the charm of the border and lengthen the flowering season of each group. This will do away with the necessity of taking out or dividing many of the plants the second season, when the border should be at its best.

Groups of one color are effective and easy to handle for the beginner. Write on a label the name of the plant and color; for instance, "Phlox Independence. White," and place in the border where each is to be planted. These labels not only act as guides to the planting, but also keep you in touch with the color scheme when filling in with bulbs, annuals, etc. To explain this system of double planting, a few suggestions follow:

Peonies and *Lilium speciosum.* The lilies fill in during August and September.

Phlox La Cygne, a beautiful white for the front, with pink verbena as an under cover, using either *Boltonia latisquama* or the giant pyrethrum as a background; both are late flowering. A few bulbs of Darwin tulips may be planted among either, the flowers will show to perfection among the young foliage of the perennials.

Anthemis tinctoria and narcissus Empress with delphiniums planted at the back make a splendid combination, while the dwarf *Campanula Carpatica,* blue, with crocuses will make a nice front. Japanese iris may have gladiolus as companions.

Seeds of love-in-a-mist Miss Jekyll, sown early between *Aconitum Napellus,* will give flowers until the latter opens. Of course the gladiolus will not be planted until next spring.

Bulbs of many kinds can be planted between perennials without interfering in any way. Tulip Cottage Maid will follow *Arabis albida* nicely; while one of the early red varieties makes a beautiful contrast with *Alyssum saxatile.* The cheery yellow blossoms of the alyssum brighten the border with the first warm days of spring.

The foregoing combinations will give an idea of what can be done to keep up a succession of bloom — which is always to be kept in mind in planning the hardy border. There is such an excellent variety of material to choose from that selecting a list is quite a task. What follows must be taken as merely suggestive and may be greatly varied to suit individual tastes.

Let us commence with the early spring flowers. *Arabis albida* with its mass of white blossoms, is followed by *Alyssum saxatile* and the carpet *Phlox subulata.* This is a charming plant for an edging or as an under cover for the later types of phlox. *Cerastium tomentosum* and *Linum perenne* are a study in blue and white, when planted as companions. The linum flowers quite late into summer.

Plant a few *Anthemis Kelwayi,* the fern-like foliage of which forms a beautiful setting for *Tulipa Gesneriana* var. *major.* The tulips add color to the border, their tall stems carrying the flowers well above the foliage.

Columbines are useful for cutting and planted among late phlox they supply a wealth of bloom, lasting until the latter is ready to open.

Sweet Williams are old favorites and always welcome. A number of new varieties of solid color have been added of late. Pink Beauty is a grand addition, as also are Salmon Queen, Newport Pink and Sutton's Scarlet.

The aristocrats of the garden are the peonies. The number of varieties is legion, wonderful in their range of color and form. From the old-fashioned *Paeonia officinalis,* var. *rubra* to the more recent creations of present day specialists, there is a rich list to choose from. Better consult the catalogues to suit your fancy and purse.

Some of the well recognized best are Festiva Maxima, a grand old variety, a dazzling white with splashes of bright carmine in the centre; Queen Victoria, an early white; Floral Treasure and Golden Harvest, are splendid in the softer shades of pink; Louis Van Houtte is a fine late dark, Francis Ortegal, crimson; Felix Crousse, brilliant red; Marie Lemoine is a fine late creamy white; Venus a beautiful shell pink; Rosea elegans a large rosy purple. Perfection a brilliant rose pink; Delicatissima pale pink. These make a dozen that embrace some of the most desirable types and colors, so far as my judgment goes.

Lilies can be planted between peonies to give a display during the summer.

Lilium speciosum and its richly colored variety *Melpomene* are both good, and with a few auratum, and the two recent introductions from China, *Lilium regale* (otherwise called *myriophyllum*) and *Sargentæ*, will give a season of lilies from early June to late September.

Foxgloves are always attractive; their tall spikes showing to advantage against shrubbery, while the flowers sway to every passing breeze. The yellow foxglove, *Digitalis grandiflora* remains in flower longer than the others and will improve for years. Blue violas are charming under this.

Campanulas, the best known of which are the Canterbury bells, embrace many shades of pink, blue and mauve and white. Persicifolia is a very pretty species, with tall erect spikes, in blue and white — very useful for cutting, as they frequently grow from three to four feet in height. *C. Carpatica*, one of the dwarf forms, is an ideal plant for the front, its mass of foliage being an attractive feature alone and it flowers throughout the season.

Where bright red colors are wanted, we have *Pentstemon barbatus*, var. *Torreyi*, and Kniphofia, *Pfitzeri*, and *Express*. These are more effective with an evergreen background, or running back into the shrubbery. *Helenium Hooperi*, the earliest of the sneeze weeds, grows about two feet in height and is a nice shade of yellow. *Heliopsis Pitcherianus* flowers through most of the summer. If cut well back in August, it will grow again and give a succession of bloom until frost.

Delphiniums with their magnificent flower spikes in every shade of blue, lasting well into July are the chief attraction of the border in their season. If the old flower stems are removed before seeding and the plants given a good watering, with cow manure liquid, they will flower a second time in September. *Delphinium belladonna*, is a real gem, sky blue in color. If seed of this is sown in April, it will flower in July, keeping up a succession until October. It is of less height than *Delphinium hybridum*, allowing it to be planted right in front of the border. Try it near *Gypsophila paniculata* or Achillea The Pearl.

Coreopsis grandiflora, with its mass of long-stemmed yellow flowers, makes a delightful contrast to the tall delphiniums. Gaillardia, better known as the blanket flower, is very showy in crimson and gold during summer. The nearest rival to the delphinium in height and color is *Anchusa Italica*, Dropmore variety, of more spreading habit, making a glorious display of gentian blue flowers that at once attract attention; the newer variety Opal has pale blue flowers.

The German iris are capital for June; among the best of these are Madame Chereau, Maori King, Penelope, Sir Walter Scott, Cytheri and Bridesmaid. *Iris pallida*, var. *Dalmatica* is a distinct type, later in flowering, of a beautiful shade of lavender and with rigorous foliage. This is worthy of a place in every planting of iris. The Japanese iris follow, lengthening the season to mid-July. Gorgeous in its range of colors, almost rivalling the orchid, this type of iris is excellent for damp places, though it appears to be just as free in the border. Forget-me-nots associate well with this type. *Heuchera sanguinea*, the graceful coral plant and Iceland poppies mingle well and are splendid where lower growth is desired. *Oenothera fruticosa*, var. *major* makes a good companion for either.

Phlox can be had in almost every shade except yellow. A selection can be made, varying in height from one to four feet. Miss Lingard has distinct foliage, is early and forms fine heads of white flowers with pink centres. Hermione and Tapis Blanc are two of the best dwarf whites. F. G. Von Lassburg, Independence, Faust, Richard Wallace, R. P. Struthers, Etna, Coquelicot, Lothair, Wm. Robinson, and Lord Raleigh will give a good variety and range of season. If some of the growths are pinched out in June, they prolong the period of flowering and at the same time leave more room for the development of those left.

Of the veronicas, amethystina (early) and subsellis (late) are nice in blue. So are the Stokesias with their aster like flowers. Eremurus gives an air of distinction to the border. They have superb spikes of flowers and require plenty of room to show them to advantage. There is danger of the eremurus being damaged by late spring frosts, as they push through the ground quite early. By placing a little straw or an inverted flower pot over them when frost is apparent, injury may be avoided.

No border is quite complete without hollyhocks, prime favorites of the old time gardens. There are nice annual varieties of these now. If the seed is sown in early spring they will flower about the time the others are going over, prolonging the season of hollyhocks materially.

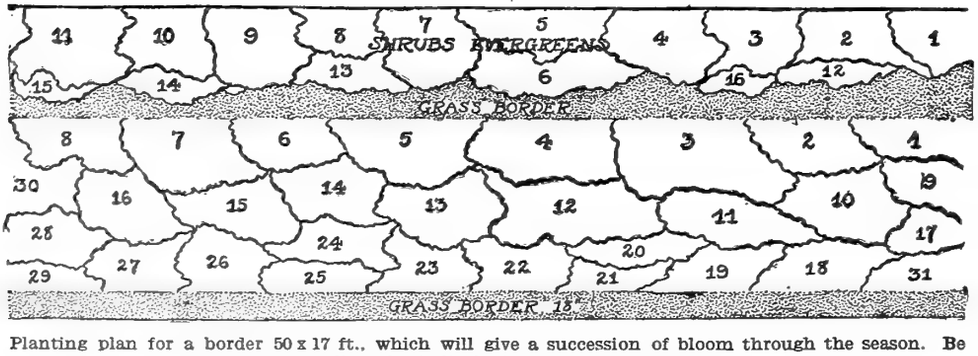
The giant Mallow Marvels are among the best things added to the perennial garden of late years. Their wonderful flowers in pink, white and crimson are very effective during August and September. Two year old plants will flower nicely the first season. Plant *Galtonia* (*Hyacinthus*) *candicans* between to flower in July.

For a variety of late flowers, there are the boltonias, in white and lilac, aconitums in blue, the giant daisy, *Pyrethrum uliginosum*, Helianthus Miss Mellish, mollis and Maximilliana, and the beautiful varieties of hardy asters or Michaelmas daisies. The latter are grand in combination with the yellow of the helianthus.

The hardy chrysanthemums will supply flowers well into November.

A suggestive list of alternates for fall planting is given on page 110.

When vacancies are left toward the back of border, cosmos and dahlias can be planted in spring, but October and September are best for setting out the other plants.



Planting plan for a border 50 x 17 ft., which will give a succession of bloom through the season. Be sure to allow the individual groups plenty of space

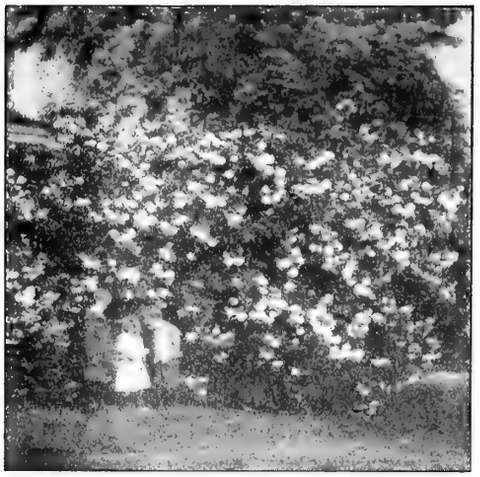
KEY TO SHRUB BORDER, BACKGROUND OF PERENNIAL GARDEN

NO.	NUMBER REQUIRED	CATALOGUE NAME
1	5	Spiræa van Houttei
2	3	Forsythia Fortunei
3	1	White pine
4	2	Lilac Marie Legraye
	1	" Charles X
5	3	Hemlocks
6	3	Lonicera Morrowi
7	2	Philadelphus grandiflorus
8	3	Altheas in variety
9	4	Cedars 3, and Calycanthus 1
10	2	Hemlock, and Cercis Japonica
11	3	Mountain Ash 1, and Viburnum licatum 2
12	3	Spirea Anthony Waterer
13	2	Rhodotypos kerrioides
	12	Pink foxgloves
14	5	Oriental poppies
15	7	Pentstemon barbatus
16	7	Kniphofia Pfitzeri

KEY TO PERENNIAL BORDER PLANTING PLAN

REFERENCE ON PLAN	CATALOGUE NAME	QUANTITY REQUIRED	COLOR
1	Japan Iris Mount Hood	9	Blue
2	Phlox F. G. Von Lassburg	7	White
3	Delphinium hybridum	10	Blue
4	Hollyhocks	9	Yellow
5	Mallow Marvels	4	Red
6	Helianthus, Miss Mellish	10	Yellow
7	Phlox Lothair	8	Salmon
8	Boltonia	6	White
9	Peony Festiva Maxima	3	White, crimson centre
10	Auchusa Italica	6	Blue
11	Coreopsis grandiflora	5	Yellow
12	Heliopsis Pitcherianus	7	Yellow
13	Peony Louis Van Houttel	6	Crimson
14	Iris pallida Dalmatica	8	Lavender
15	Anthemics Kelwayi	6	Yellow
16	Peony F. Ortegal	3	Deep red
17	Oenothera fruticosa, var. major	6	Yellow
18	Heuchera sanguinea	12	Coral red
19	Campanula Carpatica	10	Blue and white
20	Delphinium belladonna	9	Sky blue
21	Iceland poppy	12	Yellow and white
22	Phlox Hermione	9	White
23	Sweet William	12	Scarlet
24	Helenium Hoopesii	7	Yellow
25	Arabis albida	12	White
26	Platycodon Mariesi	8	Blue
27	Gaillardia	10	Red and yellow
28	Japan iris Gold Bound	7	White and yellow
29	Alyssum saxatile	12	Yellow
30	Phlox R. P. Struthers	7	Pink
31	Linum Perenne	4	Blue
31	Cerastium tomentosum	6	White

Some of Your Fall Planting Opportunities Told in Pictures



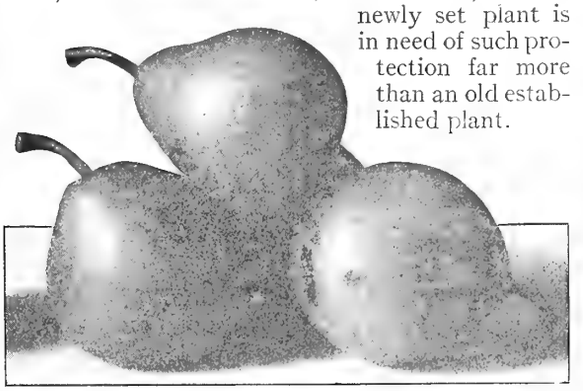
Spring flowering shrubs put out now will give a wealth of bloom next year. There is little shock of removal, and no delay in starting growth

OF COURSE you will plant all you can at this time. The great advantage for the amateur of fall planting is that he gets rid of a great deal of work at a season when time is comparatively plentiful. In spring there are other and imperative duties which crowd upon each other in an all too short season. But now it's different. What can you plant now? Everything that is shown on this page — and a host of others besides, for these pictures are only types. Of course there are some few things that cannot be planted, but the exceptions are all noted elsewhere in "The Month's Reminder." In the extreme north fall planting is to be avoided because the roots do not have a chance to establish themselves before hard weather sets in.

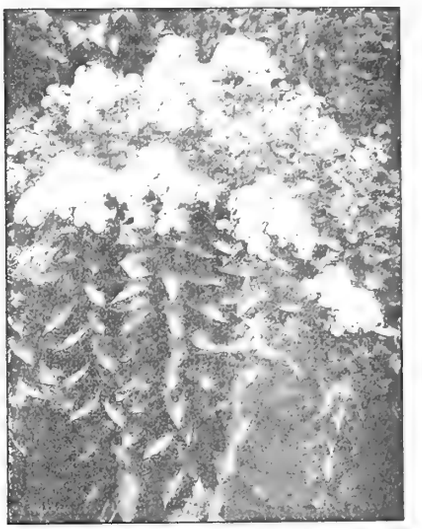
In any case newly set out stock, herbaceous or woody should be mulched — that is to say the ground around the base of the plants is to be covered lightly with some protective material. Stable manure if possible; if not use anything at hand, such as forest leaves, or old straw, etc. A newly set plant is in need of such protection far more than an old established plant.

Herbaceous stock set out now and mulched, will be quite at home in the spring. You practically gain a year's time

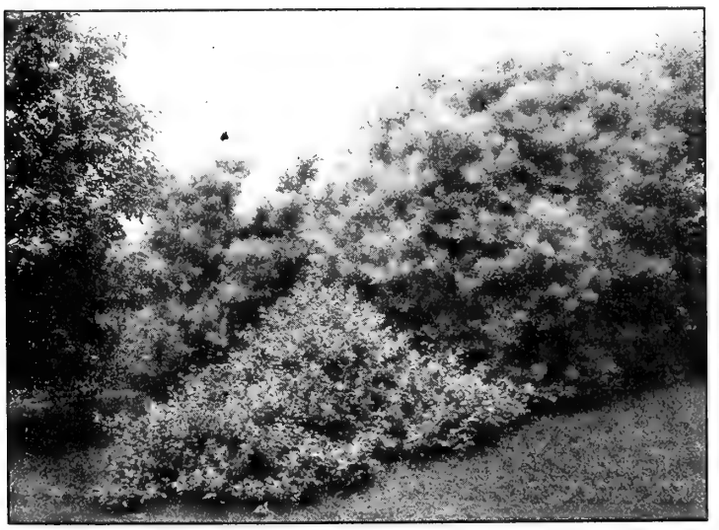
Peonies start into growth with the earliest spring days. Plant now if possible



Set out orchard fruits (except the "stone" fruits) and berry bushes in home fruit garden now because the vegetable garden will demand all your attention in the early spring



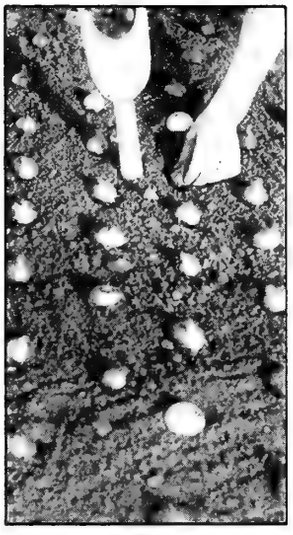
Phlox and other hardy perennials that make large clumps are easily "divided" now



Fall planting of ornamental shrubs in groups is a wise practice because the garden pictures are still fresh in your mind's eye

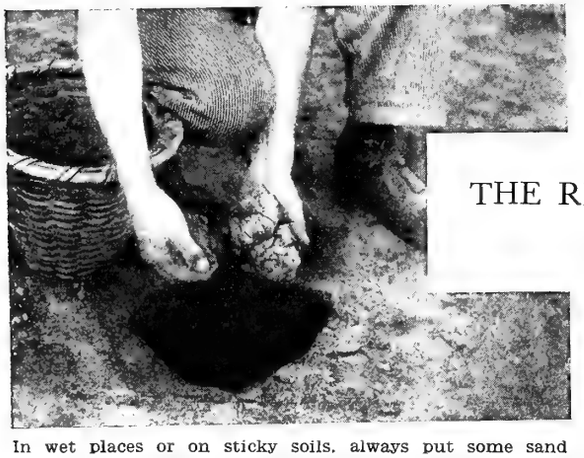
And equally so in the mixed border, defects can be remedied with real knowledge and while the tops are yet above ground

Lily-of-the-valley. Plant in clumps. Ferns combine finely as they are late in starting into growth and the lilies will cover the border early in the spring



For formal bedding plant at equal depths. Cut a dibber six in. long, and drive full length

Plant Darwin tulips along the edge of a shrubbery. They will grow right up through the branches and will hide the bareness of early spring



In wet places or on sticky soils, always put some sand around the bulbs to keep them from rotting

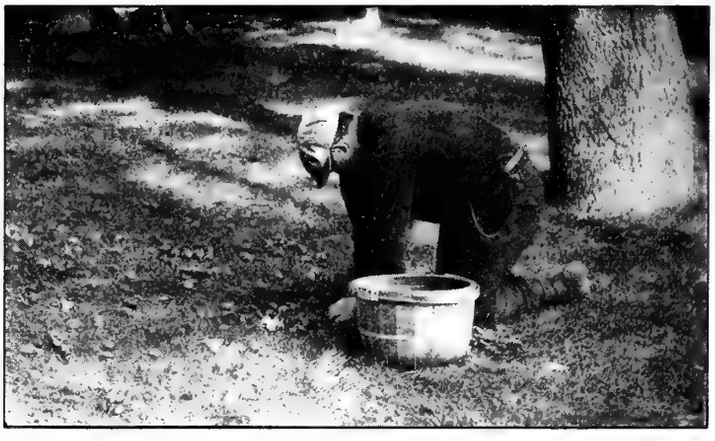
THE RIGHT WAYS OF PLANTING BULBS

Told in pictures by

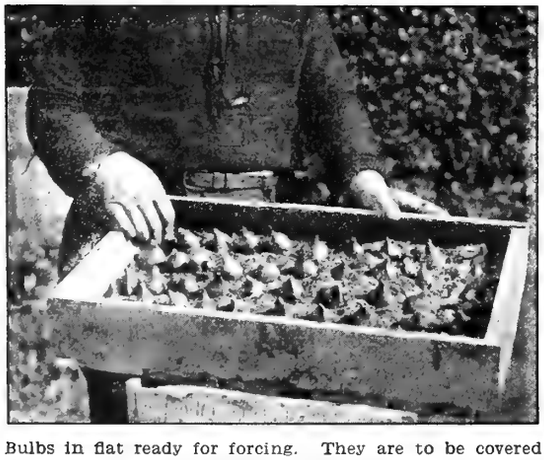
W. C. McCollom
New York

Planting in grass. Cut a cross with a spade and you can plant at least four bulbs at each operation

Don't let the bulbs lay around in the sun and air. Plant at once, even if you have to get some one to help you

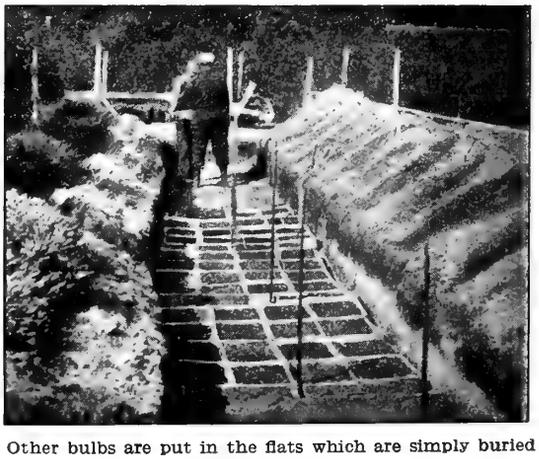


Ideal location for narcissus. They multiply under such surroundings. Plant them thickly and in patches of uneven size



Bulbs in flat ready for forcing. They are to be covered with soil

Lilies for forcing are put in pots and the pots placed in frames



Other bulbs are put in the flats which are simply buried in trenches to root

Crocus and Other Early Bulbs —By Mrs. Francis King, Michigan

PLANT SOME OF THE MORE REFINED KINDS OF THESE "LESSER BULBS" AND MAKE THE SPRING GARDEN A SHOW OF COLOR HARMONIES — SUGGESTED COMBINATION

LET me begin by presenting these "ruminations," as he calls them, from the pen of the Rev. Joseph Jacob of England, whose name is known wherever two or three daffodils or as many tulips are gathered together. "Was there ever a time," writes he, "when bulbs were not popular? Probably not. At all events, there is not much doubt about it at the present time. Every horticultural firm which considers itself at all "up" in the world, considers one of its annual necessities the issuing of a bulb list. Contrariwise, the reception and perusal of these lists are among the perennial pleasures of every one who has a garden. Bulbs are wonderfully accommodating things. I have a tortoise which we call Timmie, and for the last three months he has been fast asleep under some nice dry leaves in the cellar. Just now, with a little careful packing, he could very easily undertake a long journey.

"Bulbous plants are the 'Timmies' of the vegetable kingdom. When they have retired into their shells, they can be sent about so readily and so safely that if they lived to about ten times the age of Methuselah, I should not be surprised to find that, if it is really true what botanists tell about dispersion and propagation being the two things that plants worry themselves most about, then all well-brought-up plantlets would be taught, just as we teach the 'three R's' to-day, how to take on a bulbous state as an essential part of their life cycle."

With Mr. Jacob's whimsical wish I heartily agree, more particularly as I recall the few choice aubrietias by post from Ireland, the glories in delphinium from England in the same manner, all of which when opened were found to be exhausted indeed by their journey.

Now, before rushing toward — before leaping to our main flower, the crocus, may I pay a word of tribute to the tribe of Muscari, the grape hyacinth. While these small bits of perfection in flowers, in blue flowers — yes, a true blue in some forms — are wonderful in color they must, in my experience, be packed closely together in planting for any really good effect. While several flowers come from each crocus bulb set in earth, from *Muscari azureum*, the small and early sky-blue, I usually have but two and the tiny things seem not to spread, to multiply as the crocus does.

Of the other grape hyacinths, a delightful color picture is seen each May on either side of my little brick walk. The late Muscari Heavenly Blue clusters below the pale yellow lisle-like threads of *Tulipa retroflexa*, and below the grape hyacinth (whose strong dark blue has a metallic quality), quantities of fine myosotis plants are blooming at the same moment.

The earliest muscari are true crocus companions — azureum in dense companies, with Crocus Mont Blanc, always most lovely — or with such a lavender as Madame Mina a most unusual color combination may be made.

Since the spring of 1912 I have felt that I must take up my pen for the crocus, to introduce it in a few of its newer and less known varieties to those who have never grown those at all.

Cloth of Gold, one of the best known florists' crocus, opens its flowers in February in the North

The desire to get "something for nothing" is quite as noticeable among the guild of amateur gardeners as among those who find joy in bargain sales. And in the crocus we have first of all a bargain. Thousands for a few dollars, hundreds for some cents. Next in cheapness to seeds they are; and have a habit, when not bothered by a nervous or too-transplanting owner, of multiplying in a fashion comforting to see. In the nine years in which I have been growing the crocus on our small piece of ground, I cannot now remember having lost any except in cases where the growth of overhanging or overhungry shrubbery has eaten up the little things at their feet.

One of my first plantings before the bare east wall of brick of a then new house was of the Crocus Reine Blanche, a fine white in groups now dense, now more open, with hosts of *Scilla Sibirica* crowding among them, and that first glory of the tulip family Kaufmanniana holding outspread back of and above the little blue and white multitude its lily-like flowers — flowers which only open to the sun. *Tulipa Kaufmanniana* is costly, I admit, and growing more so, but as in the case of Darwin and May-flowering tulips, many of which are rapidly increasing in value, delays are dangerous. Therefore, buy now if possible. I must have often described it before — its general color within the flower a rich cream, running into clear yellow toward the centre of the bloom; on the outside of each petal a broad band of dull reddish rose. To myself I called it a water lily long before I read that it had been often described as the water lily tulip. In warm corners it has opened with me (latitude of Boston) as early as March 25th, though its usual flowering time in our climate is mid-April.

Among the florists' varieties of crocus, the one with true magnificence of form and color is *Crocus purpureus*, var. *grandiflorus*. Magnificent is a large adjective to apply to a low-growing flower; ordinarily one should reserve it for the altheas, or the finer gladiolus, sensational in their beauty. But it is a fact that people unaccustomed to the sight of so large and fine a crocus as this can sometimes not be persuaded that it is a crocus; therefore, the word may be permitted. And when close-growing numbers of this particular beauty are near other close colonies of *Scilla Sibirica*, there is then a spring effect worth going far to see. Maximilian, a clear light lavender, is a favorite with me. Madame Mina, white with rich lavender stripes the length of its fine petals, is a beauteous flower and Reine Blanche, of which mention has just been made, one of the loveliest imaginable whites. Mont Blanc, white, is also very fine — in these whites, and in Madame Mina as well, the rich orange stigma gives a very glowing effect as one looks down into the crocus cup. As for the yellow crocuses, I never look at them if I can help it! I have a few remnants of them from misguided purchases of years gone by, but I am always meaning to clear them out and always forgetting to do it till their small squat flowers are gone and the track of the

position of the bulbs is lost. This antipathy to the yellow florists' crocus, which, let me add, does not extend in my case to the yellow of the species crocus, may be the prejudice of ignorance, for of varieties other than Cloth of Gold and Large Yellow I know nothing. In these the yellow is the crude yellow of the dandelion (a flower I hate with all my might)! Mr. E. A. Bowles, of Waltham Cross, England, tells us that the more delicate and subtle tones of yellow are to be found in several varieties of crocus species; it is to these that I plan to turn my attention with great ardor another season.

Few of these species crocus do I already know in my own borders — only half a dozen — and as I believe readers will rejoice as I have done in some of Mr. Bowles' enthusiastic comments on or descriptions of these flowers, I offer no apology for quoting from him, as I mention the flowers of which he knows so much through years of collecting, growing, and study.

Now, in spite of my aversion to the large yellow florists' crocus, I do like *Crocus Susianus*, which is one of the bright yellows before-mentioned (Color chart, cadmium yellow, No. 1). But *Crocus Susianus* blooming as early as April 9th, planted very thickly, gave in my border the interesting impression of a large-flowering yellow *Phlox subulata* — practically no green leaf visible below the masses of bloom. Five to seven flowers appear in small tight bunches from one bulb; and back of and among this flowering mass of yellow I had colonies of the white crocus Mont Blanc. Let me commend this very simple and unstudied arrangement. *C. Susianus* is much dwarfer than Mont Blanc, therefore have it mainly to the front.

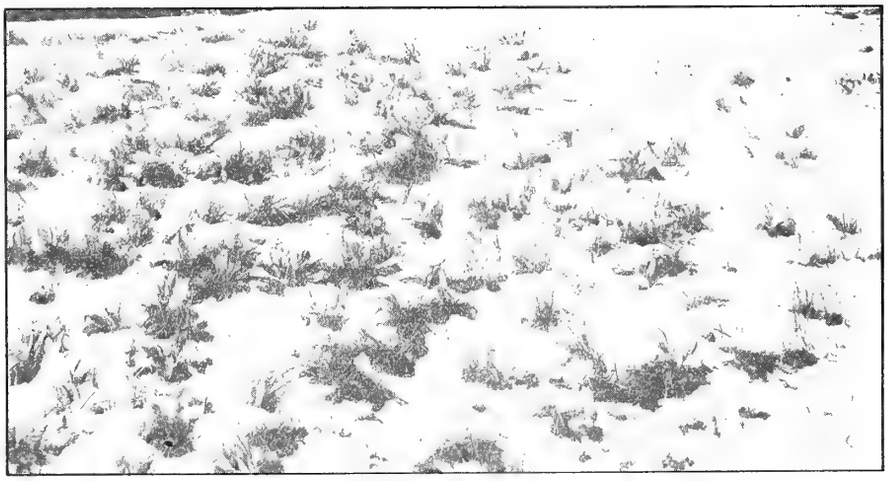
Crocus Sieberi I call a warm pinkish lavender (Color chart, Violet mauve, No. 1). Six to eight flowers come from a bulb, and the bright orange stigmata within give a glowing centre to the little flower. This is very small and low. Mr. Bowles calls it a "crocus for every garden" and adds that it "seeds freely and soon spreads in any sunny border."

"*Crocus Korolkowi*," to quote Mr. Bowles again, "from the Far East, has two good points — it flowers early and is of a peculiarly brilliant form of yellow.'' This little crocus I have grown for a few years myself and it always surprises me by appearing practically with the snowdrop.

Crocus biflorus, the "Scotch crocus," is white, with pencillings of grayish mauve on its three outer petals. The markings are exquisite and the early blooming of this crocus marks it as a specially necessary one.

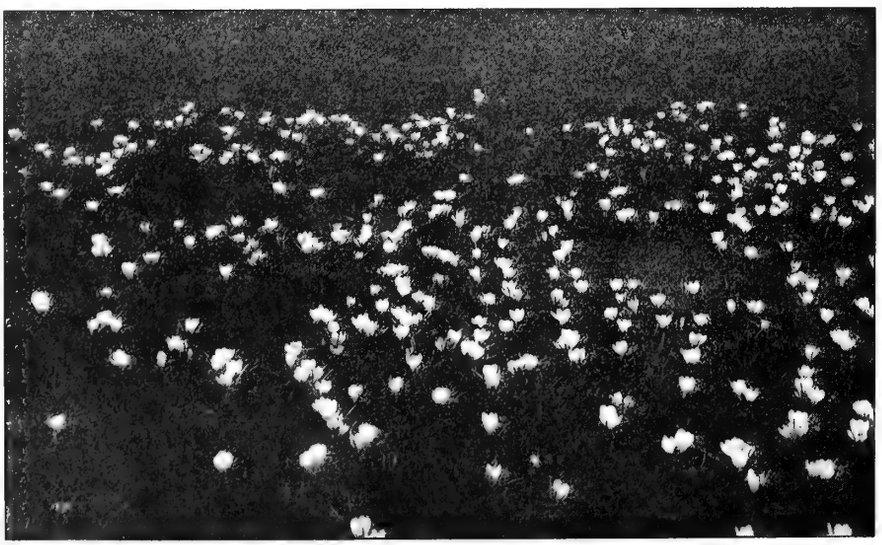
My prime favorite among all these species crocus is *Crocus Tommasinianus*. It is tall, slender, delicate, with narrow pointed petals, of a lovely lavender, slightly bluer than Sieberi. An orange pistil within it is like a vivid star. It has great height of stem, and tapering form of flower. It is the one which most delights me as a novice in crocus collecting; and last autumn, in a limited space where the ground runs up into a rather steepish slope for a few feet, which slope is covered by a thick group of the little tree known as the garland thorn, there beneath the small tree-stems I hope to see next spring hundreds of little candles, lavender candles of *Crocus Tommasinianus* running up the tiny hillside, and racing along beside them a company of *Galanthus Elwesii*, their companions in time of bloom. "I have found" writes Mr. Bowles, "*C. Tommasinianus* so far to prove the most satisfactory of the wild species for spreading and holding its own when planted in grass."

Several beautiful new seedling crocuses have come within a few years from Holland — May and Dorothea — the latter a "soft, pale lavender mauve," May "a beautiful white of fine form." These two I have; not, however, Kathleen Parlow, said to be an extra fine white, with wonderful orange anthers, nor Distinction, the nearest approach to a pink color in crocus



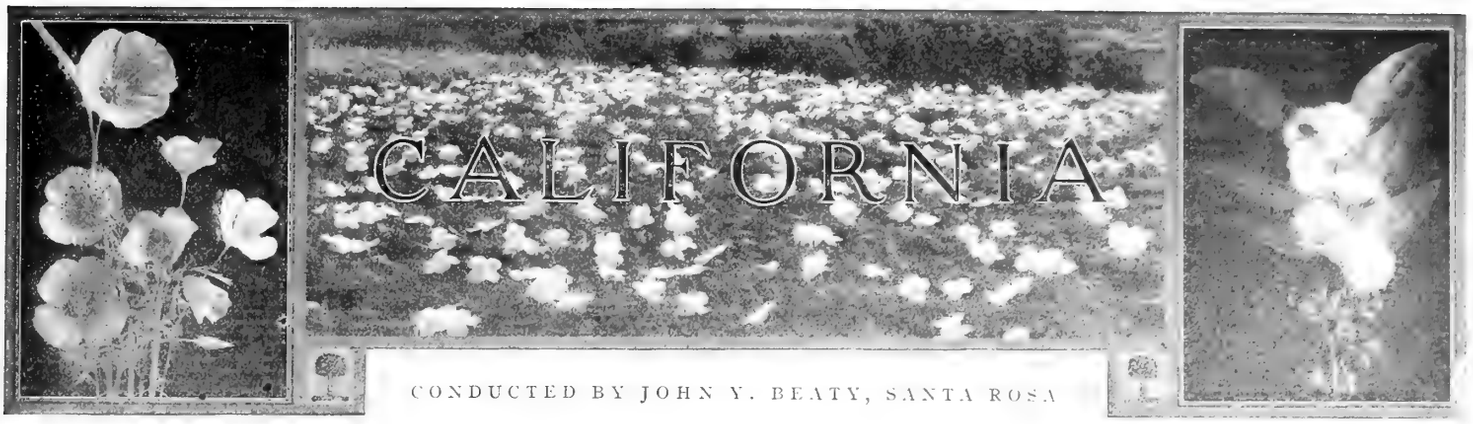
When the snow is still on the ground the colors of the crocus flowers often brighten the garden. Giant Yellow; photographed April 11

Grape hyacinth (Muscari) is a good companion for the crocus. True blue in some varieties



Crocus Mont Blanc is excellent for planting on the lawn or where light color is wanted

The Siberian squill has bright blue flowers, quite effective with daffodils



CONDUCTED BY JOHN Y. BEATY, SANTA ROSA

Flowers To Plant in October

IF THE advice given in this department in previous months has been followed, you will have a nice bulb garden started. This month the following bulbs and roots may be added: agapanthus, hyacinth (not Roman), peony, ranunculus, snowdrop, sparaxis, and tulips.

If you have failed to put in the bulbs previously recommended, it is still time to plant *Amaryllis belladonna*, anemone, crocus, cyclamen, freesia, ixia, jonquil, St. Joseph lily, calla, narcissus, and Spanish iris.

All of the flower seeds mentioned for August and September planting may still be put in except forget-me-not and feverfew.

The agapanthus is sometimes called great African lily. It is especially desirable for bedding. On large lawns, a bed of agapanthus makes a very attractive centrepiece. The plants grow to be about $2\frac{1}{2}$ feet tall in one season and each carries about 100 stalks of blue lily-like flowers in umbels. The foliage is somewhat like amaryllis, but it never dies down, and the plant is in bloom nearly all the year around. There is also a form with white flowers.

Get a mixture of colors of hyacinths unless you have a place where you can plan for a bed in which the different colors can be worked into a pleasing harmony. Get the large bulbs. They may be purchased for about $3.50 per 100 and 100 is not at all too many.

The ranunculus is not so generally grown as most other bulbs, but should be more popular. The flowers may be had in carmine, white, deep orange, deep scarlet, and orange yellow.

Snowdrops are of little value unless planted in large quantities. They are especially attractive when grown in the lawn among the grass.

Sparaxis is more suitable for conservatory planting than for use out of doors. It usually comes in mixed colors.

Tulips may be had in every color. Mixed beds are attractive, but be sure to get those flowering at about the same time in the same bed. It is not well to mix the early and late flowering sorts for the early bloomers will detract from the late ones by their dead foliage. There are both single and double varieties. Very attractive beds can be made by planting all those of one color together. Designs or successive rows can be used.

Important Tasks For October

BE SURE to disinfect all boxes in which apples have been handled. Use either steam or hydrocyanic gas. This will reduce materially the number of codling moths to deal with next year.

If you have a bed in which you think the soil may be sour or too sticky, now is the time to treat it. To determine whether it is sour, get a small piece of blue litmus paper from the druggist. Put a small amount of the soil in a glass and pour on water. After the water has stood for several hours, dip the blue litmus paper into it. If the paper is turned to pink, it is a sign that the soil is acid.

The treatment is as follows. Spade up the bed and leave it rough and without water for two weeks. Then give it a good watering and spade it up, and level. It is then ready to receive plants or seeds.

Dahlias should still be in bloom; see that each variety is correctly labeled before all the flowers are gone.

Chrysanthemums are probably at their best in most locations. Be sure that they all have sufficient support. Hundreds of beautiful blossoms are destroyed each year in the gardens of the careless because they are not properly supported to withstand the wind. It is a good plan to give a small application of liquid manure about once a week during October.

If desired, the fibrous-rooted begonias may be taken up and potted for indoor blooming during the winter. The plants should be shaded for a week or ten days after transplanting to allow them to form new roots.

From now on, weeds will grow vigorously so this is the time to make war on them. Go after those in the lawn especially. Dig out all those you find, and then roll the lawn thoroughly. Also clean up the paths, roadways, and brick walks. Weeds are sure to come up between the bricks and when they do they make it look as though the man of the house were very shiftless. Spray the roads and paths and walks with a weed killer. Then a lot of future backaches will be saved. A strong salt solution or iron sulphate solution is quite effective.

If you have a space in which you would like to grow a few walnuts, plant nuts of the California black walnut, *Juglans Californica*. When the segrow into trees four or five inches in diameter, by grafting the Franquette variety of English walnut on to them, you will provide for yourself a supply of exquisite nuts that can be depended upon in our California climate.

Unless too far north in the state, you can grow some of the tropical fruits. The avocado pear, *Persea gratissima*, thrives in the southern part. This is the time of year to secure a tree or two if you wish to grow them. Orange trees may also be set in October.

If you planted seeds of pansies in July, the plants should have grown to be strong and bushy by now. Clean out the beds that have served for summer flowering plants, thoroughly pulverize the soil, and transplant the pansy plants there. They will furnish a welcome bloom through the winter.

Almost every garden has its waste spots, or corners where it is difficult to irrigate. For these places, plan a combination of flowers that will grow without irrigation or special attention. One of the best plants for this purpose which may be planted this month is cotyledon (Echeveria). If you do not have any of this plant on your place, try to find one in your neighborhood, and ask for a few cuttings from it.

Cut short pieces from the branches, strip off the leaves for about two inches, cut the ends with a sharp knife and insert them in sandy soil in a sunny place without much water until the roots have formed. The roots will form in two or three weeks. Transplant them to the permanent location, next spring.

Vegetables for Every Month

YOU may have fresh vegetables from your own garden every month of the year in California. Successive plantings of some of the quick growing varieties make it possible. The crops that may be had in the different months are mentioned in the following list:

January — Spinach, cabbage, carrot, corn salad, kohlrabi, lettuce, onion, parsley, peas, radish, turnips, beet, celery.

February — Carrot, lettuce, peas, radish, beet, cabbage, corn salad, kale, kohlrabi, onion, parsley, spinach, turnip.

March — Onion, beet, cabbage, carrot, kale, lettuce, parsley, peas, radish, spinach.

April — Beet, lettuce, peas, radish, broccoli, brussels sprouts, kale, onion, parsley. spinach.

May — Beet, kale, broccoli, brussels sprouts, carrot, chervil, chicory, lettuce, onion, parsley, peas, potato, radish, spinach.

June — Carrot, corn, lettuce, peas, radish, bean, beet, broccoli, potato, spinach, brussels sprouts, chervil, chicory, onion, parsley, parsnip, peppers, salsify.

July — Beet, bean, carrot, broccoli, brussels sprouts, chervil, chicory, corn, cucumber, eggplant, lettuce, okra, onion, parsley, parsnip, peas, pepper, potato, radish, salsify, spinach, squash.

August — Bean, beet, broccoli, carrot, celery, corn, cucumber, eggplant, kale, leek, lettuce, muskmelon, watermelon, okra, onion, parsley, parsnip, peas, potato, pumpkin, radish, salsify, spinach, squash, tomato.

September— Bean, beet, carrot, celery, corn, cucumber, endive, eggplant, kale, leek, lettuce, muskmelon, watermelon, okra, onion, parsley, parnsip, peas, potato, pumpkin, radish, salsify, spinach, squash, tomato.

October — Bean, beet, carrot, cauliflower, celery, corn, endive, kale, leek, lettuce, onion, parsley, peas, radish, spinach, squash.

November — Beet, carrot, cauliflower, celery, endive, kale, lettuce, onion, parsley, peas, radish, spinach.

December — Beet, carrot, cauliflower, celery, corn salad, endive, lettuce, onion, parsley, peas, radish, spinach, turnip.

There are more crops here than the average family would want, but the whole list is given so as to include some of the vegetables but little grown but which are liked by some and are occasionally seen in small gardens.

There are eight crops, each of which may be had fresh from one's garden every month of the year. These are: beet, carrot, lettuce, onion, parsley, peas, radish, and spinach. Spinach and parsley will need be planted but once, but the other crops will need to be planted several times during the year to renew the supply.

Planting may be begun any month except November, but it will take several months to get the system under way. In the meantime, you will not have some of the crops that are listed because they were not planted at the right time.

Vegetable Planting for California Gardens

FRESH crisp vegetables may be had from your own garden all winter if you plant now. A garden for a small family may be planted at an expense of about $2 for seed. The first part of October should see the seeds ordered and the garden plowed and thoroughly pulverized. As soon as the seeds arrive, put them in according to directions on the packets, or following the accompanying table.

This table contains 18 crops, but there are four salad crops mentioned, two or three of which had better be eliminated. Spinach is perhaps the best of these, although some prefer the dandelion, others the corn salad, and still others the endive. If you have never grown the corn salad or endive, it would be well to try a packet of each of these. Often there are crops that may just suit our taste that we do not grow because we have never tried them.

The varieties mentioned in the table are standard varieties for California. In some cases there are other varieties practically as good, but you will be safe in using those mentioned.

The amount of seed of each kind to purchase is computed for gardens of three sizes. An ordinary family (four or five persons) will find the amounts given for a small garden sufficient. If the family is large (say ten persons) the amounts given for a medium garden should be ordered. If the demands are extra large, the other column should be consulted.

Conditions differ so much in different parts of the state, that a definite date for expecting the first of the crop is not given. The time mentioned will give an idea of the season to expect fresh vegetables of the various kinds.

The cabbage must be started in a seed bed. In the warmer coast sections the seed may be sown in the open ground, but in the interior, where extremes of temperature are greater, it should be protected in a hotbed or coldframe until the plants make a good start. If no hotbed is at hand, use a small box in the house. Put it where it can have light and keep the soil well moistened. The plants should be transplanted into the garden as soon as they are four or five inches tall. Use only the strongest — there will be enough so that you can afford to discard the poorest.

To hasten the starting of carrots, mix the seed with moist sand and allow it to sprout. Before it has sent out a very long shoot, sow the seed with the sand into the garden row.

Kohlrabi is to be treated exactly the same as cabbage.

Vegetable culture in winter is not difficult — don't fail to have a complete vegetable garden. Order the seeds now.

PLANTING TABLE FOR A WINTER VEGETABLE GARDEN

(To be planted in October)

CROP	VARIETY	QUANTITY TO PLANT			DEPTH TO PLANT (INCHES)	FOR HAND CULTURE		WHEN TO EXPECT FIRST CROP
		SMALL GARDEN	MEDIUM GARDEN	LARGE GARDEN		BETWEEN ROWS (INCHES)	BETWEEN PLANTS (INCHES)	
Beet	Extra Early Egyptian	1 pkt.	1 pkt.	1 oz.	¾ to 2	12 to 18	2 to 4	Early in January
Cabbage	Early Jersey Wakefield	1 pkt.	1 pkt.	2 pkts.	½	24 to 30	12 to 18	February
Carrot	Danvers Half-Long	1 pkt.	1 pkt.	2 oz.	½ to ¾	12 to 18	2	January
Corn Salad			1 pkt.	1 pkt.	½ to 1	12 to 18	2	Middle of February
Cauliflower	Henderson Early Snowball	1 pkt.	1 pkt.	1 pkt.	¼	24 to 30	14 to 18	Early March
Collards	True Georgia			1 pkt.	½	18 to 20	14 to 18	Early March
Dandelion	Large Leaved			1 pkt.	¼ to ½	18 to 24	8	April
Endive	Broad Leaved Batavian			1 pkt.	½ to 1	18	8 to 10	Middle of February
Kohlrabi	Early White Vienna		1 pkt.	1 pkt.	½	18	4 to 6	Early March
Lettuce	Big Boston	1 pkt.	1 pkt.	2 pkts	¼	15 to 18	4 to 6	Middle of January
Onion	White Bermuda	1 pkt.	1 pkt.	2 pkts.	½ to 1	12 to 14	4	March
Parsley	Moss Curled	1 pkt.	1 pkt.	1 oz.	⅛	12 to 18	4	December
Parsnip	Hollow Crown	1 pkt.	1 pkt.	1 oz.	¼ to ½	15	5	March
Pea	American Wonder (Early) Telephone (Late)	1 pkt.	½ pt. early ½ pt. late	1 pt. early 1 pt. late	2 to 4	14 and 36	2	January and February
Potato	Burbank	½ bu.	1 bu.	2 bu. or more	4 to 8	30	18	Early June
Radish	French Breakfast and Early Scarlet Turnip	2 pkts.	3 pkts.	4 oz.	½	12 to 18	1 or 1½	Early December
Spinach	Prickly			1 oz.	½ to 1	12 to 18	3 to 4	Middle of December
Turnip	Early White Flat Dutch	1 pkt.	1 pkt.	1 oz.	¼ to ½	10 to 18	3 to 8	January

UNDER GLASS

A Greenhouse Hobby

By S. S. Webber, New Jersey

WHAT first prompted me to put up a house was the lonesome feeling that came over me when the frosts had destroyed the last flower, and my garden was a mass of withered leaves and stalks and only the roots of the perennials were left of value to me. It then seemed if I only had a place where I could have taken some of them in, or where I could continue to have a few flowers to care for during the long winter season it would be a source of much pleasure and satisfaction, so I determined to see what could be done in building a greenhouse. One place that suggested itself was the south wall of the dwelling house. Here was a frontage of twenty-five feet with two windows opening into the dining room and a bit of blank wall wide enough to admit of cutting a doorway so as to give entrance to the greenhouse from the dining room. In width there was room enough for a house twelve feet outside of wall between the dwelling house and the flagstone walk leading from the side entrance to kitchen porch, so a glass house 25 x 12 ft. seemed to be the extent to which I could go.

The location was ideal, full frontage to the south with sunshine all day, as a couple of maple trees standing about fifteen feet out from the line of greenhouse would be rid of their leaves during the time when the house was in use and in summer the shade would make the greenhouse cool enough for such things as I might wish to keep under cover during the hot weather.

The next considerations were—what will it cost to put up a glass house of the size determined upon, what will it cost to heat it, and can it be constructed so as to not cut off the light into the dining room through the two windows which would be covered by the greenhouse? I soon found a firm of greenhouse builders who seemed to know just what I required and the curved eave style of construction with steel frame insured getting an abundance of light so the dining room would be amply provided for in that respect.

There are many details of construction that directly determine the cost of a house and the builders will provide estimates and plans to meet almost any outlay that may be set as the limit by the intending purchaser. And where the buyer has some practical knowledge of, and a handy knack of using, tools, mixing concrete, doing a little painting, etc., much may be saved to reduce the final cost of construction. So far as the house frame, setting the glass, and putting up the house proper is concerned, let some builder of greenhouses who has a reputation for satisfactory work do all this at a fixed price, as it will be hard for any one else to do as good a job for the same money, and any attempts ending in a patched up appearing house will be most unsatisfactory in results.

An estimate with sketches for a leanto, curved eave house, with one entrance from the yard level at the east and near the kitchen porch and another from the dining room by a short flight of steps near the other end was soon in my hands. The estimate included everything erected in place, on foundation walls to be provided by the purchaser according to builder's plans. Heating pipes and boiler to be provided under a separate estimate and the work done by local steam fitter. This I accepted at the price of $650.00.

The foundations were at once started, first digging a trench 18 in. deep by 12 in. wide; the bottom was firm gravel, clay and sand, which insured the walls against settling. The trench was filled with concrete and from the surface up the side and end walls were carried to a height of four feet with a thickness of 8 inches. As soon as the walls had hardened the house material arrived and a man to put it up. The cast iron base plate with gutter combined was bedded in cement mortar spread on the top of the wall, and the steel ribs or rafters attached with the upper ends set into and anchored in the brick wall of the dwelling house. Angle irons were attached between the steel rafters and these carried the cypress ribs on which the glass was laid. The glass was 16 x 18 in. long and at the eaves or turn the glass was bent to the proper curvature to give a smooth continuous surface with no ledge or obstruction to hold snow or ice. The foundation and walls cost $60.00 including trenching.

The heater is a hot water four section, rated at about 700 square feet, grates to burn hard coal. The pipes both for flow and return are cast iron 4 inches outside diameter. Under the bench there are three lines of 4 in. pipe for flow and under these three lines same size for return. Both these triple lines connect to manifolds from which the single lines go to and from the heater. All joints were made with lead wool caulked up tight against a couple of turns of twisted hemp. The heater capacity is considerably in excess of the greenhouse requirements, as I wished to serve the double purpose of heating the dining room and one sleeping room above, using the standard type of radiators.

I find the heating quite easy to manage and but a few moments morning, noon, and night are required to make all adjustments and replenish the coal in the fire-box. Assuming that a glasshouse temperature of 60° Fahr. is about right, I find that in ordinary winter

By properly selecting the plants to grow together, you can have a constant succession of well developed flowers all winter

weather, say from 20° to 30° above zero, a water or heater temperature of 120° is ample. For zero weather about 160° is required, and below zero from 180° to 185° may be required. Coal is put on at 7 A. M., noon, and 6 P. M. and a sprinkle if needed at 10 P. M. A temperature regulator, by the heat expansion of a liquid contained therein, works the draft stack and inlet dampers by means of a lever and chains attached to the dampers and gives a very complete control of the heat. In mild weather I disconnect the regulator entirely, close all dampers and regulate by the valve in the flow pipe. By reading a thermometer outside the greenhouse before setting the flow valves for the night with due allowance for prospective changes I find that a very close approximation to 60° can be maintained and even if it goes down to 56° there does not seem to be any injury to anything I have tried so far.

Sweet peas, carnations, snapdragons, do better at a little below 60° than over. Some growers advise 58° as a normal heat.

The growing beds consist of one raised bench 3 feet wide running the entire length of the house and across one end, giving about 80 square feet; on the other side of the house, nearest the dwelling is a solid bed 3 feet wide by 18 feet long, the steps leading down from the dining room taking up the remaining space. The raised bench has an iron pipe frame with cypress sides and bottom. The solid bed has a concrete retaining wall 4 inches thick, 12 inches high. All this work I did myself and no special account was kept of the cost, but the materials did not cost more than $25.00. No provision for heating was made for this solid bed, but the two lines of heating water pipes were set close up to the wall on the inside of the dwelling house which formed one wall of the bed, and as these pipes extended along this wall the entire length a gentle warmth was transmitted.

Having completed the glasshouse the next thing was to fill the beds. The usual compost was made of sods with all the roots, and attached earth, which was of fine clay loam, and cow manure, and with some sheep manure and ground bone added. After working it over twice it was in good condition to put in the beds. In the raised bench, spaces and holes were left in the bottom boards for drainage. In the solid bed a 2 inch layer of screened gravel and clinkers was put down, and compacted by ramming, and the compost was spread to a depth of 5 inches on the bench and 8 inches in the solid bed. This completed everything ready for planting.

It was now about the middle of August and I decided to make my first venture with some pink Killarney roses setting them out in the solid bed, and in the long raised bench bed I planted carnations, pink Enchantress and Beacon in about equal proportions. In the cross bench at the end of the house I planted a double row of nasturtiums of the climbing variety, close up to the outer side and in the middle and inside were planted snapdragons (*Antirrhinum majus*), pink and white. At three places in the long bench and close to the outer wall I planted tomatoes; in order to give more depth of earth for the roots of these I made three small frames about a foot square which set up about six inches above the level of the bed and these were filled up with earth giving nearly a foot in depth.

A half dozen orchids were hung from the metal roof purlins and a varied assortment of ferns, begonias, and crotons was potted and placed on shelves arranged above the solid bed along the house wall; these potted plants were not taken in until late in September. The results were in many ways satisfactory and quite instructive. The usual troubles with aphides, mildew, white fly, were gone through with and the various remedies therefor were applied for the most part with entire success.

Toward spring, seeds are planted for early garden vegetables in flats, and in one way and another my spare time was profitably and agreeably passed.

A lean-to greenhouse can be built in connection with the dwelling. Heated frames attached to this almost double the capacity

Plants for Given Temperatures

I HAVE just built a small house; it is electrically lighted, and will maintain a night temperature of 40 degrees, when outside temperature is 40 degrees below zero. Again, we do not have sunlight over 40 per cent. of the days in winter and at this latitude the shortest days are about seven hours long. Could I use electric lights to advantage? What flower and foliage plants would you advise my growing?

Michigan. F. N. B.

If the house is piped for 40 degrees when the outside temperature is 40 below zero, it would be perfectly simple to maintain a temperature of 50 or even 60 degrees at night, if desired.

A temperature of 40 degrees in a greenhouse is rather low and there are few things that can be grown at that temperature. If, however, a house is arranged so that it can be run at 50 degrees, there is a much larger variety of plants to select from. If the low temperature is imperative, the following can be grown: Genista, acacia, rhododendron, cineraria, calceolaria, primula, campanula, pansies, mignonette, all of which can be grown at 50 and will do better at 40 degrees.

I do not know of a single foliage plant that can be grown at the lower temperature named; but at 50 degrees ferns, Rex begonias, *Dracæna indivisa*, araucaria, aspidistra and aucuba may be grown, and they may be augmented by azalea, bougainvillea, lilacs, wisteria, cyclamen, schizanthus, stocks, tulips, hyacinth, narcissus, gladiolus, spirea, freesia, dwarf peas, snapdragon, daisies, flowering begonia, heliotrope, pelargonium.

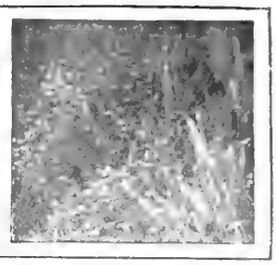
If the house could be run at 60 degrees night temperature, there are better opportunities; use roses as the main crop, with lilies, lily-of-the-valley, callas, amaryllis, begonias and heliotrope as side crops.

The mistake too often made is in getting too much of a conglomeration; if the house is small reduce your variety of plants to reasonable proportions. If I had a small house — say 20 x 10 ft. — I would select for my flowers: carnations, snapdragons and mignonette, for permanent flowering; for pot plants (for house decoration): cineraria calceolaria, primula, cyclamen, and daisies, with a few shrubs, such as lilacs and wistaria, and bulbs which can be worked as a side issue and will not take very much of the valuable bench space, using tulips, hyacinths, narcissus, and freesias. That would be about as great a variety as would be practical to flower well under one roof. Run such a house at 50 degrees. Everything should be in pots except the carnations, snapdragons, and mignonette.

In regard to the electricity, this is beneficial but should not be overdone. It has been found very beneficial for forcing vegetables when the plant came to maturity and was then cast aside, but plants that are to form the foundation for winter flowers must have rest and cannot be forced day and night without harm. If you do use electricity for forcing, proceed slowly, watch the plants carefully, and do not let the wood get soft and sappy as that is the first sign of overforcing.

NewYork. W. C. McC.

The Garden Doctor



Continued from page 52, September number

CHAPTER XVII (*Continued*)

STEPHEN McLEOD? He is a curious fellow who comes up here every Sunday. He has stock in the pasture above — you may see him when you go up the hill — he haunts it. He looks a little like your patron saint, 'Apple seed Johnny.'"

"What did he have to do with your getting well?"

"Lots. I can't tell exactly; but he did. He makes you feel as if you were only a little part of a very great life, as if in all the out-of-doors was an immense and wonderful force that enfolded you. And it rests you, just like when you were little and things went wrong, and your mother took you up in her arms. The fret and the trouble goes out and the quietness and the strength comes in. I don't know how it happens, but it does happen, and the touch of the earth has something to do with it. You feel as if the things that had concerned you were curiously unimportant beside the sky and the birds and the growing things, and you come in touch with the wonderful patience of the old earth."

"However it was brought about," said he, "I'm delighted at the result." Then a silence fell.

Suddenly I had that curious warning sensation that every woman knows, somewhere in the back of one's head or hair (our inheritance, I suppose from the prehistoric days when a man's attentions consisted of dragging one by the hair or whacking one over the head with a club) while clear before my eyes as if it were present, instead of the apple tree and the wide stretch of green, was the old garden of the Protheroes' just as it looked on a day three years ago. June, it was, and early in the morning, too. And Richard had made me come over to see his roses, and he stood by the sun dial at the end of the garden and touched the little Wichuraianas that had climbed to its face. His hand trembled a little as he touched them while he asked me what I wished he had not. The thin, brown hand that laid beside me now on the seamed weatherbeaten threshold trembled a little. I came back to the present with a start. Richard was speaking.

"But I didn't come altogether for the orchards," he was saying, "that was in the nature of a — pretext. Do you remember what I asked you three years ago?" he ended abruptly.

"Yes," I said slowly, "I remember, But I feel like a wholly different person, Richard, like a snake that has sloughed his skin ——"

"Then you may feel differently," he said, "about that. People change, ideas — modify. I have cared for you for a long time," he said simply.

"But I'm not the sort you want, Richard," I protested uncomfortably. "It should be some one stronger, with some life and force, and energy. I haven't courage to take up so — demanding a life. I couldn't! I couldn't face parishoners; any time they worried my roots, I should just succumb, like the plants with the cutworms! It's humiliating, but it's true. I couldn't."

"Those are excuses," said Richard quietly, "not reasons. What's the reason? Don't you care at all?" He laid one thin brown hand on mine and at that I turned and faced the large lenses which were rather terrifying just then.

"Not that way," I answered. "Don't you see, it's just because we've been neighbors and friends for so long that you think of — of this sort of thing. Propinquity makes no end of trouble. You can care for some one else very differently, so that it would be an utterly different thing. I know it."

"How do you know it?" said Richard quickly and a bit suspiciously.

Whereat I was idiotic enough to color, as people often do for nothing at all. But Richard looked at me still more suspiciously. He started to say something, but what it was, I don't know, for just at that moment Clarky came around the corner by the lilac bush with the milk can in her hand. She was a bit flushed from her walk and her thick boots were soaking.

"How early we all are!" said she briskly. "Have you been catching worms, Mr. Protheroe?"

"I am bound for the old orchard, Miss Clarke," he said. "I have no doubt there are worms in abundance there. If you are planning a fishing excursion, I will bring you some, though I had intended leaving them for the woodpeckers."

"Why didn't you keep him for a proper breakfast?" said Clarky disappointedly, as Richard took his way up the hill. "I know Mrs. Tarbox has given him nothing but pie for his lunch — pie and perhaps layer cake. That's not suitable nourishment for an all-day tramp. I certainly hope his experiment works. It's as rare to see a clergyman trying his precepts as it is to see a physician willing to take his own medicine and submit to his preferred operation. Administering is so much more pleasant."

CHAPTER XVIII

RICHARD was by no means as disconsolate as it seemed to me he ought to have been. Rather he appeared relieved; his spirits, instead of being heavier, grew perceptibly lighter. Until I began to wonder if Aunt Cassandra had put into his head any extraordinary ideas about my being in a languishing condition owing to blighted affection. You can count on your friends, but you never can tell what relatives are likely to do; they often feel empowered to act for you and to think for you, and yet they know you less than any one of your aquaintance. Wherein lies the nucleus of many a family quarrel.

But to return to Richard Protheroe. He prolonged, instead of curtailing his visit. He stayed two weeks more with Mrs. Tarbox, nor did he shun our hill. Instead, he came up it every day. He sat on Clarky's bench below the lilac bush and had tea with us. He stayed for dinner or supper whenever he was asked. He said our whole scheme of life was "distinctly Ardenic"; that our housekeeping reminded him of Rosalind's and Celia's. "But what a pity they had no fireless cooker!" The odd fellow who haunted the woods, he conceived to be Orlando; he said he firmly expected to find panegyrics hung upon the trees and had already begun to look for them. And he called Mrs. Tarbox Audrey, behind her back, of course; he said she had that Shakespearian character's literalness and passion for the exact, the concrete. Also that Audrey was the true type of the native countrywoman, while the others of "As You Like It" were dilettante.

He grew quite interested in my garden, although, like Clarky, he didn't take it as seriously as I could have wished. He admired my mound of blossoming squash vines encircled by cornflowers and said it would have delighted William Morris with its combination of the Useful and the Beautiful.

Mrs. Tarbox didn't altogether approve of the Rev. Richard. She thought he came up our hill too much. She eyed him severely when he talked of "prospecting"

and she told me afterward that "ef he'd give Mis' Pritchard a good account of his prospects 'twould be more to the p'int." Also, she held that a young clergyman shouldn't gallivant.

It did not seem to me that working in my garden could be described as gallivanting and Richard really did put in some work. He cut saplings from the beech-woods and helped Clarky set up poles for the bean, which were fairly clamoring for assistance and stretching out frantically, with long swaying shoots, to find something to help them skyward. After the poles were set, he cut other saplings, made cross-poles of them, lashing them in place with string, and constructed a rude pergola, "to carry out your William Morris effect," said he. One rainy day he and Clarky had a beautiful time in the woodshed at the work-bench making frames for starting perennials.

Clarky is really a surgical nurse, which is why she so loves a saw and hammer, I suppose. She and the Rev. Richard did the work, and they did it with joy and energy.

I sat on the doorstep and watched and offered suggestions. There's nothing more delightful than to witness other people working for your garden when you have the pleasing assurance that the work is being properly done. So I sat and watched them hammering and sawing and looked out of the wide door toward the distant hemlocks and watched the gusts of mist and rain hurrying by the trees and up the hill, like a ghostly silent army in flight.

The frames were interesting. Richard had brought down from the barn a motley array of old boards that he and Clarky had found in the attic — old window sashes from which every pane of glass had long been absent. They made the frames to fit the window sashes — that is, to fit two sashes set together, making a frame the size of a window. The height of the frame at the back was a foot and a half, and at the front a foot, so that the sash had the proper professional slope. They tacked cheese cloth over the sashes.

"The florists use lath," said Richard, "but this will serve. All you need is a little shade. Young perennials, in a state of nature, come up slightly under the shadow of their parent's leaves, and we have to simulate the natural environment."

He told me how, in the autumn, I could set glass in the sashes and have a sure-enough coldframe. He said he thought the farmers in our part of the world were mildly insane not to use their storm windows as a sash for coldframes from March until Christmas time and sell forced vegetables to summer residents.

"Not insanity," said Clarky, "merely arrested development, Mr. Protheroe."

Next day the frames were properly set east of the woodshed, where they had a little shelter from the north and west. The soil was made light and smooth, and then I did the planting: sweet William, Canterbury bells and larkspur and hollyhocks, monkshood, China pinks. The larkspurs were a dark blue "hybridum" and a pale blue Cœlestinum; the hollyhocks were all single varieties. Richard said they were less liable to disease and also more decorative. Pansies I had too, and platycodon and little English daisies.

It was Richard who insisted on the hardy plants. He said annuals were very well, but they were to a garden as summer boarders to a town — useful, but by no means taking the place of year round residents. He said he couldn't for the life of him see why green gardeners always began operations with roses and annuals which were like starting chicken raising with incubator chickens, when one might have the maternal services of a worthy hen and be spared much anxiety and responsibility. He said that bulbs and perennials and shrubs were infinitely easier to manage, but never did a green gardener try them. He told me that my little perennials that I was starting in July would be ready to go to their permanent homes in late September; that they would then be on hand in the spring with but little further care from me. I could have sown lots more, but I didn't know what I would do with them.

"You'll have abundance to give away, as it is," said the Rev. Richard. "That's half the fun of gardening. Wait till you see the garden I have! I'm going to make an Elizabethan 'Flowery Orchard' of that old orchard beyond the church and the children will come from miles around to beg for the flowers."

"You haven't had your 'call' yet," said I.

"I shall have it, my dear Caroline," said he. "If the people will not give me the usual five hundred, I shall offer to come for four hundred and eighty-eight. I shall have tea-parties in my garden, and the nice old ladies who come will get the habit and make a pretty bit of garden themselves for the same purpose. They will come to me for slips and cuttings and young plants."

"But the time," I said, "how can you possibly do it?"

"Judicious management and autumn planting," said he. "Gardening consists not so much in a wild frenzy of industry in the spring as in doing odd bits of work at the proper time — here a little and there a little. In doing things, not so much when others sleep, as when they do not think about it. The difficulty in which the Foolish Virgins found themselves was not that the oil for the lamps was impossible to obtain; it would have been a most simple matter had they done the work at the proper time. But most people garden after the manner of the Foolish Virgins and rush frantically about the work when the season has already begun. Such, I believe was your method."

"Besides," he continued, "I may bring two or three Juvenile Delinquents to assist."

"But how could you possibly look after two or three young imps besides the garden?"

"That will be the interesting part, my dear Caroline. If I can show a creditable and a profitable garden and yet have a little leisure, and if I can show young sinners fairer and fatter and of better behavior than the more properly pedigreed children of the neighborhood, then I shall be in a position to express an opinion on the community problems. And if I cannot do the trick, why exhort?"

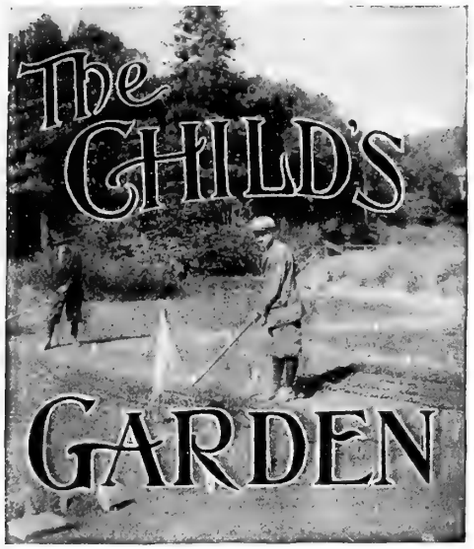
Chapter XIX

WE MISSED Richard, after he went back to civilization, more than I had supposed we should. Especially did Clarky miss him. He was terribly energetic like herself. Beside the coldframes and the bean-pole pergola, they made a bridge of fallen logs across the little brook, cut the dead wood from some of the trees in the old orchard and made one of the darling old things spruce with a Spartan severity — as sanitary as a hospital.

I am not sure it really liked the change. I have always had a notion that, however bad it is for their bodies, these old trees must find their spirits enlivened by the multitudinous life around and about and over them; that the pines must take an interest in the squirrels that make their houses under the roots, in the high-hole woodpeckers that carve abodes for themselves far aloft; and that the apple trees must rather like the visits of the woodpeckers who tap them over as assiduously as an osteopath looking for a defect — and if there were no borers or other insects to reward them — but this is rank heresy, I know! I suppose it comes from watching the woodpeckers until one gets their viewpoint. Certainly when insects worried my garden, their aspect changed.

But my garden wasn't suffering. For almost the first time I could survey it without seeing forty things that I ought to do and hadn't done. I began to feel as the barn swallows must have felt when their brood had got past the gaping mouth stage and the clamor for incessant attention, and the parents could watch with more or less calmness and criticize the flying process. Hitherto, I had been able to do nothing but try, rather frantically, to keep the plants from being killed by something or crowded into ill health. Now I could look about with a bit of detachment and consider the garden as an artistic creation, something in the way I had fondly regarded it when I lay on my back and planned, with the catalogues to help and no distressing realities to worry. I could consider now, with some degree of placidity, whether hollyhocks would look better here, or there; for the young plants were growing contentedly in the frames and might stay there all winter without injury — a very different matter from deciding where to put them when the May sun is beating down perilously hot and the young things are lying in a packing-box, roots out of the ground, as clamorous for their native element as a fish out of water.

(To be continued)



Conducted by Ellen Eddy Shaw

An Experiment in Bulb Culture

In The Garden Magazine of October, 1907, there was an interesting account given of how the author had worked out a plan for a continuous bloom of bulbs from Christmas to Easter. The article read thus: "Here is a dollar collection of bulbs that gave one amateur flowers every day without a break from Christmas to Easter." Then this little time table followed:

Chinese lilies bloomed from Dec. 23 to Jan. 12
Double Roman narcissus bloomed from Jan. 13 to Jan. 23
Grand Soleil d'Or narcissus bloomed from Jan. 22 to Feb. 13
Crocus bloomed from Feb. 7 to March 12
Van Sion narcissus bloomed from March 7 to March 25
Princess Marianne tulips bloomed from March 23 to April 9

Two fifth grades in the Ethical Culture School, New York City, were planning for their fall work in bulb culture. They read over this list and immediately the question was raised, "do you suppose we could make a list like this work out on time." So it was decided to try this as an experiment with the above table as a basis for the plan.

Certain problems arose; because of these problems partly unsolved, this is worth trying by other boys and girls at school, or at home. Some of the problems which came to these Ethical Culture School boys and girls as they did their work were the following: first the time element, both as to how long must one allow between bringing the bulbs to the light and the blossoming and also the length of time of the bloom; second, the best combination of bulbs to use.

It may be of help to hear just how this worked so if you try the experiment this fall you may profit by this experience. Do try it and let us know your results. For the past two years it has been tried in this school as a fifth grade problem, and will be worked at again this year since it is not satisfactorily worked out yet. The class leaving the fifth hands over its results to the entering class.

In the beginning these children were told that they might have two dollars and fifty cents of the school funds to spend on this experiment. This sum need not be greater than the original experimenter's sum, or it might easily be less.

Now came the work of selecting varieties. The classes wished to try some hyacinths. So they were told that Roman hyacinths bloomed before Dutch ones. They were also told that it was possible to force Roman hyacinths into bloom for Christmas. If tulips were selected the early blooming ones were recommended.

Then the children studied bulb catalogues. One child found out that it paid to buy excellent named varieties of Dutch hyacinths. On this as a recommendation the class risked one whole quarter buying a Jacques New Holland hyacinth. They found the results bore out the statement.

The bulb order for Grade V, A and B, read as follows:

½ doz Chinese lilies	$ .50
1 pink Charles Dickens Dutch hyacinth	.15
1 Prince o Wales Dutch hyacinth	.15
1 Jacques New Holland hyacinth	.25
1 doz. early rose colored Roman hyacinth	.40
1 doz. Duc Van Thol Scarlet tulip	.35
1 doz. Hero crocus	.20
1 doz. single Von Sion narcissus	.35
½ doz. paper white narcissus	.15
	$2.50

The work of ordering and bill making was a part of the arithmetic work of the grades. This list as you see differs a little from the original one. The time table of blossoming dates reads as follows:

Chinese lilies, Dec. 20 to Jan. 15
Paper white narcissus, Jan. 15 to Jan. 22
Early rose colored Roman hyacinths, Jan. 22 to Feb. 5
Hero crocus, Feb. 5 to Feb. 12
Prince of Wales Dutch hyacinth, Feb. 12 to Feb. 19
Prince of Wales Dutch hyacinth and Charles Dickens, Feb. 12 to Feb. 19
Duc Van Thol tulips, Feb. 19 to March 5
Van Sion daffodils, March 5 to March 14
Jacques New Holland hyacinth, March 14 to April 4

Then came the potting. The method of doing this was carefully discussed. Chinese lilies were

Plant some bulbs in the window box and bury the box outdoors. This picture shows the stage of growth the tops should be in before they are brought indoors and to the light

The ideal way of planting bulbs in a box. Provide ample drainage over the holes in the bottom, cover this with wet moss, and set the bulbs at the same depths as you would if planting outdoors. Bury it in the garden until roots are well developed. Set each bulb carefully on its base

to be planted in pebbles and water; the Dutch hyacinths were planted in separate pots by Grade V A, and in hyacinth glasses of water by Grade V B; the Roman hyacinths went in pans; the tulips in pots; and the crocus and narcissus in flats or low boxes.

Bertram Schmit of this class describes how they planted bulbs as follows:

We thought it would be a nice idea to have a continuous bloom of flowers in our class room, so we ordered bulbs. This is how we planted them. We first put broken flower pot in the bottom of our pots, pans and boxes for drainage. Then we added charcoal to sweeten the soil. Next came the soil with a little sand bed upon which to place the bulbs. This sand drains the water away from the base of the bulbs and so decay is prevented. Then we covered our bulbs over with soil.

After the planting the vessels of bulbs were placed in a large packing box on the open gymnasium roof. The bulbs of course might have been stored in a dark, cold place inside the building. This school has no such place.

The method of preparing such a box is the following. The packing box was lined throughout with a heavy wrapping paper. The first year the lining was not put in the box and some of the bulbs placed close to the sides and ends of the box were frost bitten. Over the bottom of the box was placed about four inches of sand. Soil or ashes could be substituted for this. Then the potted bulbs were placed on the sand bed and over and about these more sand. After this the box was filled with coal ashes. This layer should be eighteen inches in depth in the North, at least. In very cold weather heavy paper or rugs should go over the top of the box. In country schools where ground space is available, dig a trench just wide enough to receive the pots and eighteen inches to two feet in depth. Put the potted bulbs in this trench and cover with ashes.

It was rather of a nuisance the first year to keep packing and unpacking the box in order to get the proper pots out at the right time. This last year smaller boxes were used and marked with the dates for unpacking. These time facts were handed on for the benefit of the next class. They had allowed three weeks from time of bringing into class room until the time of bloom. The tulips and Roman hyacinths started to bloom in two weeks. The narcissus and crocus came out on time while the Dutch hyacinths were behind time. This would differ with the amount of root system developed and the vigor of the bulb.

The Chinese lilies were brought out of the dark closet immediately after Thanksgiving. These were only just starting to bloom at the beginning of the Christmas holidays. Grade V A left behind this message to its successors, "you had better not try Chinese lilies for Thanksgiving and Christmas recesses spoil the experiment. We recommend that you try continuous bloom from January first to Easter."

Grade V B says, "do not risk your hyacinths in water, for they did less well than those which were potted in soil."

The crocus were not very satisfactory although they bloomed on time. Both classes agree on planting narcissus in masses; the Roman hyacinths and tulips in pans, four or six bulbs to the pan; and potting the Dutch hyacinths in single pots because of the large flower spikes of the named varieties.

This is an experiment for several years' work. The time from the bringing in to the time of bloom should be kept carefully, also the number of days each kind of bulb continues its bloom. These are valuable facts. Try this and let us know your results so next October these may all be published.

First grade children planting and labeling. Bulbs are the best things for beginners in gardening because they are easily handled and the result with ordinary care is sure

Fun With Bulbs!

WHY not become acquainted with some one family of bulbs? Try the narcissus family. All the members are alike yet different. Here is the Chinese lily, poeticus, polyanthus, paper white, jonquils and daffodils, for instance. Know the difference between the bulbs themselves as well as the blossoms. One family characteristic is the tendency toward a pointed nose. Leave these inquisitive noses poking above the earth when potting them. If you plant outdoors put about three or four inches of soil over the noses.

Did you ever plant any of this same family in sand, moss, or peat fibre? Get a glass bowl, like a fish globe. Fill it with sand. Poke paper white narcissus bulbs down into the brown sand, close together, but do not let them touch one against another. Leave the noses out of the sand. Fill the bowl up with water and set it away in a dark, cold closet. When the roots have formed so that they are all over the inside of the bowl, then is the time to bring this out to the light. Keep the sand moist all the time. Start this in early November and you'll have a bowl full of bloom at Christmas time.

Did you ever operate on bulbs? Here is a good experiment too. Fix up two glass dishes all ready for Chinese lily bulbs. Put some bulbs nestled down into the pebbles of one dish just as usual. Now operate on the bulbs which are to go into the other dish. Operate as follows: hold a bulb pointed end up in your left hand, make a cut with a good sharp knife from the tip of the bulb nearly to the base, and in about one quarter inch in depth. Do not make the incision from the extreme tip of the bulb but a little way from the top. Make about three such cuts in each bulb. Place the two dishes away in the dark. Which bulbs form roots first, which dish full do you bring out to the light first, and which bulbs bloom first? If this is done at school have several classes try it out.

Chinese sacred lily (*Narcissus Tazeta*). It may be grown in water in a bowl. The most frequent cause of failure is keeping it too warm

Would you like some red blossoming bulbs at Christmas? There is only one kind to use, the Duc Van Thol tulips. On the whole, tulips are the least satisfactory of all bulbs for indoor work. But start your red Duc Van Thol right off; take them out of the dark right after Christmas.

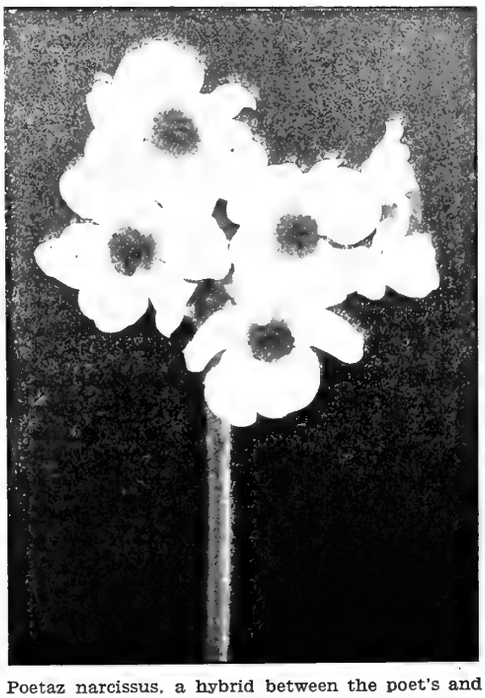
It's fun to work out color schemes in bulbs. Suppose you are allowed only those bulbs which have blue blossoms, what would you choose? You could have hyacinths including the little grape hyacinths, crocus, blue bells, and fritillarias. Yellows give a wider scope for choice for the narcissus family compete in this, also tulips.

Did you ever see how much you could get for your money? Suppose I give you thirty cents, what bulbs could you buy for that sum? You could buy a hyacinth for twelve cents; one half dozen crocus for ten cents; two tulips for five cents; and a Van Sion daffodil for three cents. This is a good piece of work for grades in school.

Try the little people on potting bulbs in individual pots for themselves and also for others. Narcissus and Roman hyacinths are perhaps the best bulbs to use for this purpose. The Dutch hyacinths will do well too, if they are left in the dark long enough for good root development. Allow eight to ten weeks for this work. Roman hyacinths will develop roots in less time, often in six weeks. Plant flats full of hyacinths and daffodils. Then after they come out of the dark, pot up the bulbs in individual pots for Christmas gifts.

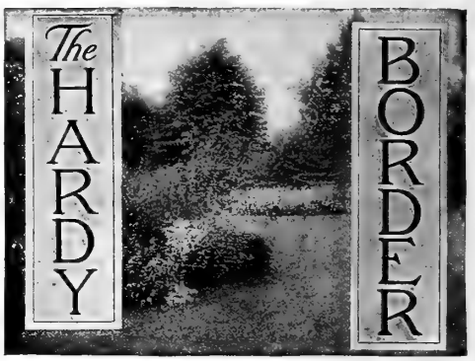
Work out for future reference the number of bulbs to plant in a given sized pot. For example: how many tulips could one plant in a five-inch pot; how many Van Sion daffodils in an eight-inch pan. This might be worked out in tabular form by one class and given to the other classes for reference in their work of planting.

The real jonquil (*Narcissus jonquilla*). It has round leaves, and deep yellow flowers. Very fragrant



Poetaz narcissus, a hybrid between the poet's and polyanthus narcissus. Not quite hardy in the North

Long-trumpet daffodils, the most useful for growing in the garden



HARDY PERENNIALS FOR FALL PLANTING

(See also article on page 95)

TRADE NAME	COLOR	HEIGHT	SEASON
Achillea ptarmica "The Pearl"	White	2 ft.	July–Sept.
Aconitum Napellus	Blue	3 ft.	July-Aug.
Aconitum autumnale	Violet blue	"	Aug.-Sept.
Arabis albida	White	6 ins.	April
Alyssum saxatile	Yellow	9 ins.	April-May
Aquilegia	Various	2 ft.	May-June
Anchusa Italica	Gentian blue	3 to 4 ft.	June–July
Auchusa Italica Dropmore var.	"	"	"
Anthemis Kelwayi	Yellow	"	June–July.
Anemone Japonica	White	"	Sept.–Oct.
" var. Queen Charlotte	Pink	"	"
Aster, Michaelmas Daisy	Various	2 to 6 ft.	Aug.–Oct.
Bocconia cordata	Creamy white	6 to 7 ft.	July–Aug.
Boltonia asteroides	White	4 to 5 ft.	Aug.–Sept.
Boltonia latisquama	Lavender	"	"
Campanula Carpatica	Blue and white	9 ins.	June–Aug.
Campanula persicifolia	"	2 to 3 ft.	"
Campanula Medium	Various	2 ft.	June–July
Centaurea montana	"	"	June–Sept.
Cerastium tomentosum	White	9 ins.	May–June
Chrysanthemums	Various	2 to 3 ft.	Sept.–Nov.
Coreopsis	Yellow	2 ft.	June–Sept.
Delphinium hybridum	Shades of blue	4 to 6 ft.	June–Oct.
Delphinium belladonna	Sky blue	2 ft.	"
Digitalis (Foxglove)	Various	3 to 5 ft.	June–Aug.
Dictamnus fraxinella	Purple	2 to 3 ft.	June–July
Eremurus Elwesii	Soft rose	6 to 9 ft.	"
Eremurus robustus	Rose pink	"	"
Gaillardia	Yellow and red	1 to 2 ft.	June–Oct.
Gypsophila paniculata	White	2 ft.	June–July
Helenium Hooperi	Yellow	2 to 3 ft.	"
Helenium autumnale	Lemon yellow	4 to 5 ft.	Aug.–Sept.
Helianthus Miss Mellish	Yellow	5 ft.	"
Helianthus Maximiliani	"	6 to 8 ft.	Sept.–Oct.
Heliopsis Pitcheriana	"	3 to 4 ft.	July–Sept.
Hemerocallis	Yellow and orange	2 to 3 ft.	June–Aug.
Hesperis matronalis	Pink and white	2 ft.	June–July
Heuchera sanguinea	Coral red	1–2 ft.	June–Sept
Hibiscus Giant Marvels	Various	5 to 7 ft.	Aug.–Oct.
Iberis sempervirens	White and pink	10 ins.	May–June
Iris Germanica	Various	2 to 3 ft.	"
Iris Japanese	"	3 to 4 ft.	June–July
Kniphofia Pfitzeri	Orange and scarlet	3 to 4 ft.	Aug.–Sept.
Linum perenne	Blue	1½ ft.	June–Aug.
Lychnis Viscaria	Crimson	1 ft.	June
Lychnis Chalcedonica	Scarlet	2 ft.	June–July
Monarda didyma	Red	2 to 3 ft.	July–Aug.
Myosotis palustris	Blue	1 ft.	May-Aug.
Oenothera fruticosa major	Yellow	2 ft.	July
Oenothera Youngi	"	1½ ft.	June–July
Peonies in variety	Various	2 to 4 ft.	June
Papaver nudicaule	Yellow and white	1 ft.	June–Aug.
Papaver orientale	Scarlet	3 ft.	June–July
Pentstemon barbatus, var. Torreyi	"	4 ft.	July–Aug.
Phlox decussata	Various	2 to 4 ft.	June–Oct.
Phlox subulata	"	3 to 6 in.	April–May
Physostegia Virginica	Lavender	3 ft.	July–Aug.
Platycodon Mariesi	Blue	1 ft.	July–Oct.
Polemonium Richardsoni	"	1 to 2 ft.	June–July
Primula veris	Various	6 to 9 in.	May–June
Pyrethrum hybridum		2 ft.	"
Pyrethrum uliginosum	White	4 to 5 ft.	September
Rudbeckia Golden Glow	Yellow	5 to 6 ft.	Aug.–Sept.
Scabiosa Caucasica	Lilac	2 ft.	June–Aug.
Scabiosa Japonica	Blue	"	July–Sept.
Sedum Sieboldii	Rose pink	9 ins.	Aug.–Sept.
Sedum spectabile	Pink	1 ft.	September
Spiræa aruncus	Creamy white	3 to 5 ft.	June–July
Spiræa Ulmaria	"	2 to 3 ft.	"
Statice Silver Cloud	White	2 ft.	July–Aug.
Stokesia cyanea	Blue	"	July–Oct.
Thermopsis Caroliniana	Yellow	5 to 6 ft.	June–July
Trollius Europaeus	Lemon yellow	2 ft.	May–June
Valeriana officinalis	Pink	3 to 4 ft.	June–July
Veronica amethystina	Blue	2 ft.	June–Aug.
Veronica subsessilis	"	"	Aug.–Sept.

Converted to Fall Planting

IN RESPONSE to the frequent and insistent urging of THE GARDEN MAGAZINE to "plant in the fall," I began my garden work for the spring of 1913 in September, 1912. New flower beds were made after the modern regulation method — dug down from eighteen to twenty-four inches in depth, the bottom soil removed altogether to be replaced by fresh, strawy manure, the top soil mixed with fine manure, wood ashes, and screened coal ashes filled in, and the beds were ready for planting. The planting was to consist only of herbaceous roots; if shrubs were to be used the digging should go down at least a foot deeper. The beautiful, invaluable white phlox, Miss Lingard, was my first care.

This phlox, which I find is little known, blooms with the Canterbury bell, foxglove and sweet William in late June and early July, in that interregnum which might be named Epoch II in the floral calendar, when the flowering of the spring shrubs and bulbs (Epoch I) is over, and the summer flowers (Epoch III) — hollyhock, annuals, gladiolus, etc. — have not yet come on. Gardens not provided with the above named biennials are bare indeed at that season. I realized this fact in all its significance the past summer when I made flying trips to several gardens of renown and found that, in the absence of the biennials, there was "nothing doing" in the way of flowers in late June.

The Miss Lingard phlox, in addition to its manifold good qualities as a flower, multiplies more readily and bounteously than any phlox I know. I divided three clumps, young stands only a year old, into seventeen pieces each with good roots attached. These I set at irregular intervals in the new beds. Next came white foxgloves in threes and fours; then single white Canterbury bell, best of all white flowers if we except the Madonna lily; a few roots of gypsophila were set in, and then, to color this groundwork of white, the double pink Canterbury bell, with its cascades of bloom like half-opened June roses, was used in profusion. I cannot use the single pink Canterbury bell because its shade of pink does not harmonize with the prevailing salmon pinks and vivid flame reds in my small garden of eighty-one feet across, and all in view at once. One long bed was devoted wholly to the Newport sweet William mixed with white sweet William. One year I grew the Newport by itself and I found it really needed the white to show off the color. The sweet William grows so evenly that it shows to better advantage when grown by itself without admixture of other flowers. It is simply invaluable in a garden since the new shades have been developed, a wonderful transformation from the old time rag carpet sweet William. They are practically annuals, as the seed that ripens one year can be immediately planted to bloom the next year. They stand our winters without protection and many of the plants last from year to year though they are classed as biennials. During its season it blooms into a solid sheet of color.

The evolution of the salmon pinks and flame reds in flowers constitutes the greatest achievement of the present age in floriculture. Consider what has been done for the phlox! What a change from the old, sad, faded, gloomy purples! Take R. P. Struthers, for example. So much has been said in praise of this phlox that it need get no further mention here except to say that it divides with almost as good grace as Miss Lingard. It was set about the new beds, with the shy, white chimney bellflower, which blooms for me only after three years' growth from seed, the beautiful white physostegia, young hollyhocks, and Dropmore anchusa, where the last would not interfere with the reds.

These plantings went on during all the fall months, the last work being the digging and enriching of the old beds as far as was possible without injury to the permanent roots; the preparation of the sweet pea trench according to the formula for the new beds; the iris roots all taken up and set into one of the new beds by themselves. On November 23d, very late for us, all planting and winter covering was finished. "Everything in splendid shape for winter and spring" is the last entry for 1912 in my garden book.

Now for the proof of the pudding. Last spring opened very inauspiciously for my garden. All

the annuals planted in the house were ruined by my having used soil from under an old abandoned barn. I had always used leafmold for this purpose, but gave up that plan to follow the advice of a nurseryman, and so used the barnyard soil instead of the leafmold. Some element develops when manure is too old that will destroy anything that grows. The nurseryman used the same soil for setting out some shrubs and they all died.

Then outside business interfered with my time to such an extent that I could only give the time necessary to remove the winter coverings, and let it go at that — the poorest outlook for a garden I ever had. I absolutely had no time to hoe or stir up the ground in any way, only weeding when a heavy rain made it easy, quick work. But the fall planting proved its value; I never saw finer flowers. Everything from the most delicate to the sturdiest plant bloomed riotously. Not a single root died during the winter. In spite of the absence of annuals or gladiolus the garden bloomed continuously. One thing I did do; I watered the garden very copiously. THE GARDEN MAGAZINE can count in me, henceforth, a faithful echo of its slogan: Plant in fall.

Minnesota. MARY MADIGAN.

Wintering Climbing Roses

FOR five years I have been very successful with wintering climbing roses by just tying them together in a bundle against the fence and putting some bulrushes or straw over them to protect them from the sun; and I have been guilty of saying that this was sufficient covering for the Wichuraiana type for this locality.

However, in 1912 we experienced very severe and prolonged cold, the thermometer dropping as low as 28 degrees below zero, with the result that of the sixty odd climbers which I had been experimenting with none of the Wichuraianas came through without being killed to within a foot or two of the ground. Only three climbing roses were hardy enough to maintain their eight or ten feet of height without killing back.

In previous years we have had touches of 10 degrees below zero and the method I adopted of hilling up the earth around the neck of the rose and then tying the branches together and covering them with straw to keep the sun off them had been quite sufficient. Some of my neighbors have Crimson Rambler climbers that have been exposed to the weather for ten years and have wintered all right, but that year they were killed to within a few inches of the ground.

Sometimes success is had by laying the climbers on the ground and covering them with soil or a good heavy mulch of strawy manure. I noticed last year that a few of the branches that had fallen on the ground and were protected only by the snow came through all right. The manure or litter should not be tightly packed, as the average rose will stand cold down to at least zero.

The hemlock boughs will not do for a climate that runs away below zero; and in such a location, if you cannot cover the plants with earth, I think the only thing left is the strawy manure or dry leaves. Lay the plants down on the ground and place the straw or leaves around them so that they will get some ventilation, but still be kept warm enough not to winter kill badly. Exterminate all field mice when roses are laid down, or they will eat every scrap of bark from the rose shoots.

Toronto, Canada. W. G. MACKENDRICK.

Greenhouse heating problems solved by the Readers' Service

Early Autumn Pruning

SOME years ago I assisted in gathering the apples from a tree on our place. They were not much as apples went, but fruit that year was scarce, and the tree was loaded. Even small twigs growing out from the main branches held fruit. The tree had been neglected because of its inferior quality, but it rarely failed of a full crop. Its habit of growth was as dense as a privet hedge. So close and interwoven were the branches that one could not get into the tree at all.

Exasperated, we used a saw to cut out at least half of the top, trimmed off all undesirable shoots, cleared the larger branches of twigs, and made a tree with a fine open head.

While we were about it we trimmed out several other trees, but gave none the drastic treatment bestowed upon the first. The cut surfaces were thickly covered with grafting wax and we congratulated ourselves that there would be one less nuisance on the place. Just before freezing weather we went through the orchard and were attracted by the beauty of the tree, its healthy appearance and plump buds. The next spring we kept track of its growth, taking care to rub off all shoots that showed themselves on the larger branches.

The fruit gathered that season was more than double the size of any it had previously borne. Of course, that by itself proved nothing but it started a train of inquiry. Why not prune orchards before the next season's buds began to develop? Why not prune as soon as the fruit was gathered, allowing all of the forces to concentrate on something that would "count," instead of raising thousands of buds to be cut away in the spring, taking just so much vitality from the tree that might be saved for growth and fruiting.

The idea was so alluring that we made many experiments in early autumn pruning, which were so satisfactory that we applied the same principle to the grape vines.

The difference was almost past belief — larger clusters, finer development, and we thought richer flavor. Certainly the grapes were sweeter and more delicious than ever before.

We proved to our satisfaction that better fruit will result from autumn pruning; and as for grapes, nothing could induce us to return to the old custom where sudden frost and thaw might start the sap running and drain the vitality of the vine through the cut surfaces.

New York. NELSON S. STONE.

Storing Vegetables and Apples in Ashes

THE old-fashioned country house, heated with stoves, furnished in its earth floored cellar a most excellent place for the storage of apples, potatoes, and many kinds of vegetables. The fluctuations of temperature in the cellar were small and did not occur rapidly, the air kept moist, and fruit and vegetables did not become withered and unfit for use in a short time.

With the more modern home, provided with a concrete cellar and usually with the furnace in the cellar, the conditions for the preservation of fruits and vegetables are certain to be much less satisfactory. The air is dry and the temperature is rising and falling almost daily. When the temperature falls, moisture is deposited on the fruit which favors the growth of fungi. With rising temperature the air again becomes hungry for moisture. The fruit and vegetables expose a large amount of surface for evaporation and under such conditions withering soon results.

The usual methods recommended for the preservation of such vegetables as celery, endive, cabbage, and carrots, is to bury them in moist sand or soil. Sand is not usually to be had without going to considerable trouble; and both sand and soil dry out quickly. It occurred to me that ashes from hard coal, which, when once moistened, retain the moisture with great tenacity, might be used in place of sand or soil. It has been our custom to moisten the ashes before they are removed from the furnace, in order to prevent dust; in a few days they are in good shoveling condition and are not at

all sticky or water logged. So we tried an experiment.

Last October we wrapped heads of endive in paper to keep the ashes out of them; the roots were left exposed below the paper. A layer of the moist ashes was placed in the bottom of a box; the endive heads were packed in rows and between the rows we placed some of the ashes. The box was placed in a room separated from the furnace room by a rough board partition. The last of the endive was served as the salad for the Christmas dinner. Water was added but once during this period. Celery was also wrapped in paper and placed in ashes; carrots were buried in the same and at the middle of April were as crisp as when they were removed from the ground in October.

Just before Christmas it came to mind that ashes might be a most excellent material in which to keep apples. I at once packed away some Baldwins in the moist ashes. Each was separated from the others in such a manner that if rotting did occur it would not spread. On the 20th of April most of the apples were in perfect condition, being hard and firm. Only a few showed decayed spots. The apples not thus protected are so withered as to be useless. On account of the dryness of the room, the fruit does not decay at all badly; yet it is much more marked in the apples kept in the air than in those stored in the ashes.

E. G. HASTINGS.

Lifting and Storing Tender Bulbs

THE bulbs or roots of such plants as tuberose, amaryllis, canna, caladium, dahlia, gladiolus, Cooperia, zephyranthes, Watsonia and all other half-hardy bulbs, which will not winter out of doors, must be dug before the ground freezes. A warm sunny day in late autumn favors a preliminary drying.

Tuberose, gladiolus, and bulbs of small plants are very easily lifted by thrusting the spade under them and lifting by their tops, but cannas are much more stubborn. Where they have grown well, large root clumps are formed which are held so tenaciously by their long feeding roots that often it is difficult to get them out without digging. By digging entirely around them and then inserting the spade directly beneath the root mass it can be lifted without much energy.

Canna roots are more difficult to dry and more likely to rot, hence it is necessary to get as much of the roots' surface to the air as possible. After cutting the tops off about three inches above the root, separate the root clumps by cutting through the connecting parts, leaving a generous piece of root to each stalk. Small clumps might better be left intact until spring, however, if they are well-dried before storing. It is not necessary to separate such as the tuberose and gladiolus bulbs until ready to plant them in the spring, when they are readily pulled apart without injury.

For drying or curing bulbs for winter storage, a dry floor in a sunny room, or a loft, or a flat house roof is excellent. Twist off the tops of the gladiolus and amaryllis bulbs when dry. All the bulbs will keep if stored in a cellar where the air is dried by the house furnace or heater. Gladiolus bulbs will winter in an unheated cellar where the temperature gets almost down to freezing but tuberose and canna roots will not.

New Jersey. M. ROBERTS CONOVER

Tulips That I Like

ASCARCE, pale yellow, early tulip, chosen at random a year ago from some Holland lists, did very well with me last spring. It is Hermann Schlegel, with the shape of White Hawk, keeping its goblet shape through all weathers. Its color and quality are most unusual. Of the softest yellow—on a palette one would mix it of chrome and Chinese white—it is for a few days flamed with delicate Nile green up the outside of the petals. After a week, the green turns to the uniform pale yellow.

Then a suggestion of rose color begins on the tips of the petals, and runs down the edges in a thread line. The green and pink markings are so light, however, as not to alter the soft yellow tint of the tulip seen from a few feet away. The flower is most exquisite when cut, particularly for table use with artificial light. The anthers are pale yellow and never dirty. The stems are from nine inches to a foot long.

Early Paul Moreelse and late Rosalind are two tulips that so repeat each other that a bed of the two, mixed, gives full three weeks of the same clear rose pink. The tint is deeper than that of Killarney rose, being indeed more exactly duplicated in geraniums than in roses. Both tulips are standard varieties, cheap and abundant, of the reliable sorts which give fifty flowers for fifty bulbs without any more coddling than plenty of water *on the ground, not on the flowers*. Many amateurs irrigate their tulips on the wrong end of the plant, and then wonder why the flowers fall. As sensibly might one locate a hot-air furnace in the attic, and with it try to heat the house!

Cheap tulips, paradoxically, are the sorts worth most in a garden. In twenty cases out of twenty, the cheap sorts—earlies, Mays, Cottage, Darwins, and all—are not cheap because they do not sell, but because they have constitution. They multiply for the amateur; they teem, swarm, and cure well for the Holland professional grower. That is the kind of flower for busy people, commuters, spasmodic gardeners, and owners of a floral hoodoo. Cheap tulips are nearly automatic, under reasonable conditions.

Tulip Sultan, a Darwin and only medium late, is as good a money's worth as any Holland bulb for the American garden. In season, it comes three days before lilies-of-the-valley begin to open, a floral date as widely recognizable as anything I can fix. The Sultan is as hardy and reliable everyway as its small pace-maker, too. In color, it is like polished rosewood done to a piano finish, with the graining evident. It is weather-proof. Its leaves are gray green and heavy, four or five to a plant. Frequently it branches, giving a secondary flower on the main stem, and most bulbs contrive to throw two main stems. The flowers stand upright and cupshaped, thirty inches above the ground; their long stems have a whitish, delicate bloom like a Niagara grape rubbed shiny with handling.

It is not fragrant in the usual tulip way, nor bad-smelling like the beautiful Clara Butt (which is so lovely planted with Sultan and a good white), but is scented like a cake of honey. Sultan, by the way, is a gross feeder, and semi-aquatic if its preferences be consulted. It is also one of the cheapest of the good Darwins.

A tulip which must be kept away from all pinks and purples, on pain of inspiring choking sensations in the beholder's throat, is the late La Merveille. It begins to flower with a short stem and a curious bricky bud very long and shaped like a finger roll. It grows steadily redder, and after four or five days is as tall as the ordinary bizarres of mixtures. La Merveille's leaves are close to the ground, its stem naked and bending to follow the sun, but not weak. The full-grown flower reaches immense size, larger than *T. Gesneriana*, var. *spathulata* by an inch of diameter. For their length the petals are narrow, and contrive to get themselves into positions making the interlaced triangles of Oriental sanctity. The base of the flower is yellow, zoned with a slight olive line, the anthers cream; the inside and outside of the flower giving the same tint, as is not altogether common in the Darwins. It is deliciously primrose scented.

It would be a magnificent plant to place against

box, yew, red cedar, or any green that projects a coppery reflection in sunlight. It is singularly and horribly hostile to blue or any bluish shade of gray, as the Colorado spruce, and in a small formal garden must be planted with caution. It would probably harmonize with the coppery young foliage of a blood-beech or some of the Japan maples. As a cut flower indoors for grouping against mahogany or cedar panelling it is perfect. In spite of its good qualities, though, it is not to be planted rashly; few tulips can be so uncompromising in their demand to "head the ticket or split the organization."

A glorious mid-season tulip is the double Vurbaak, classed in the Dutch lists as a double early. It is pure vermilion, the true and pristine vermilion rarely to be seen by adult eyes, a glory proper to the water-color paint boxes of childhood, and hardly attainable elsewhere save in the circus parade. Its height runs a scant foot. The blooms are very large, very double, open in umbrella shape, and endure all extremes of weather nobly. The stem is thick and strong, the leaves very broad and of a distinct blue-gray velvety tone very effective when clumps are planted in a border. First-grade bulbs of this variety are large and extra heavy.

Pennsylvania. E. S. JOHNSON.

Time for Planting Trees

SET out some trees this month, most especially peach and plum trees. Get from your nurseryman a list of the fruit and shade trees that may safely be planted now in your section of the world.

Clear the fruit garden of all old trash, which is a breeding place for insects and disease.

Don't forget that the present is a good time for setting out strawberry plants. Get good plants to start with; don't get any kind just because they are cheap. There is as great a difference in plants as there is in seed, and you can't tell the difference until they make a crop.

Dig sweet potatoes late in the month on a clear sunny day. Let them dry thoroughly before storing. Always put down a layer of pine straw about a foot deep on which to pile the potatoes. Place pine straw or pine needles around them and bank up with soil, leaving a little hole at the top of the pile so that air can penetrate the mass on hot days. And have boards to put over them to keep out rain. If you have a potato house it is much better, as they can then be kept at an even temperature and entirely dry. Before storing in old potato houses it is a good plan to burn sulphur in the house. Close the doors so that the sulphur smoke will kill all insects and diseases, such as potato rot. Remember the important point in keeping potatoes is to avoid bruising them; therefore, handle carefully.

Plant Dutch bulbs. This is the best month of the whole year for planting them.

Pansy plants may be transplanted now if they have four or more leaves. They should stand four to six inches apart on rich soil, the only soil pansies ought to be planted on. If it is not rich add well rotted manure.

Continue to plant lilies.

Continue to sow rye for grazing and crimson clover for cover crop.

Georgia. THOMAS J. STEED.

Easter Lily as a House Plant

AT THIS time of the year I begin to plan for winter flowering bulbs. I find that I can get better results with less effort from bulbs than from any other winter flowering plant that can be grown in the house.

I have been told by several experienced gardeners that it is a waste of time and energy to try to grow Easter lilies in the house because of the uneven temperature; but I like to work out new things for myself. Last October I purchased one Bermuda Easter lily bulb. I placed it in the centre of a 6-inch pot, covering with about one inch of soil. I used ordinary garden soil with twenty per cent. leafmold, putting a few pebbles in the bottom of the jar for drainage. After watering thoroughly I placed the pot in a dark corner of the cellar where it remained for ten weeks with a temperature varying from 55 to 70 degrees. During the next four weeks I gave plenty of light but no sunshine.

At the end of fourteen weeks I put the pot in a westerly window where the temperature varied from 50 to 75 degrees. During the entire period of growth I watered freely every four or five days. In just six months and one day from the time of planting, a 7-inch bud opened up into as fine a bloom as I have ever seen in any greenhouse.

I treated hyacinth bulbs in the same way with excellent results, only shortening the time in darkness to six weeks instead of ten; and at the end of twelve weeks I was rewarded with as large and full a bloom as any of those I saw on exhibition last April at the International Flower Show at Grand Central Palace, New York City.

Massachusetts. LYDIA L. KELSEY.

The Value of Rye Grass

RYE grass, commonly called Australian rye, Italian rye, or darnel is a real aid to the lawn maker. If your soil is new and has not been worked into good tilth, and if you want something that will stay green all winter in mild climates and come on early in the spring in others, try rye grass.

There are two species of rye grass, *Lolium perenne* and *L. Italicum*. Both are annuals, or short-lived perennials, and both are practically the same. Another closely related species is supposed to be the "tares" of the Scriptures.

Rye grass, if sown in the fall, makes a quick growth, covers the land with green in the winter time if the weather is not too severe, and starts to growing rapidly in the spring. If watered well and cut once a month it will stay green until late in the spring. In some places it will live two or three years.

Before starting a permanent lawn, rye grass makes a pretty effect on new ground and helps to prepare the soil for other grasses. Where Bermuda grass is grown the combination with rye grass is almost ideal. When the Bermuda turns brown in the fall after the first frost, rye grass, sown broadcast on the Bermuda sod at the rate of one ounce to every one hundred square feet, will keep the lawn green all winter where it is not too cold. It will grow rapidly and be at its best during the early spring months. As the weather turns hotter when the Bermuda grass begins to grow, the rye grass gradually dies out. It is a little trouble to plant the rye grass every fall, but the effect is worth the effort. Fertilize liberally with rotted manure or nitrate fertilizers. Sow the seed in September or October and water well.

Rye grass looks much like blue grass. The leaves are somewhat coarser but the appearance is the same, and if kept nicely trimmed it makes a pretty lawn. It has a wide use in winter resorts in the Southwest, where a quick effect is needed in the winter, but where a lawn is not required during the summer and is difficult to keep up.

Planted each fall, rye grass will make a prettier lawn more quickly than any other grass, in regions to which it is adapted and it will stay pretty until hot weather. It will doubtless have more value in the Southern States, but even farther north its quick growth in the spring makes it highly desirable.

Arizona. DONALD F. JONES.

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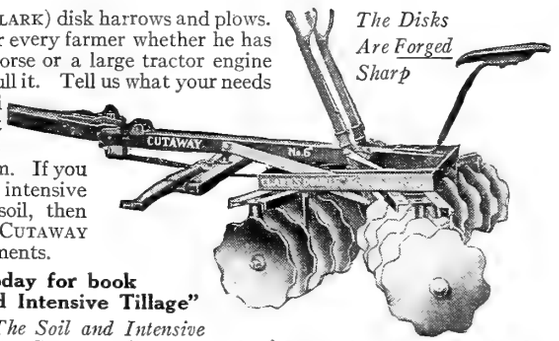

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The Phloxes are effective in mass bedding, in small groups, or as single specimens, but are most beautiful when massed in front of a planting of shrubs. I wish you could come to Wyomissing and see my plants and flowers, but you can grow just as fine specimens in your own garden if you get my plants this fall. Every year I import the newest foreign varieties, which makes my collection one of the finest in this country.

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Painting adapted from the
Chicago Tribune cartoon of John T. McCutcheon

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THE COUNTRY LIFE PRESS, GARDEN CITY, NEW YORK

NOVEMBER
1913
Vol. XVIII. No. 4

Chrysanthemums Without Glass
Winter Protection
Home Made Greenhouse
Good Tulips
Planting for Privacy

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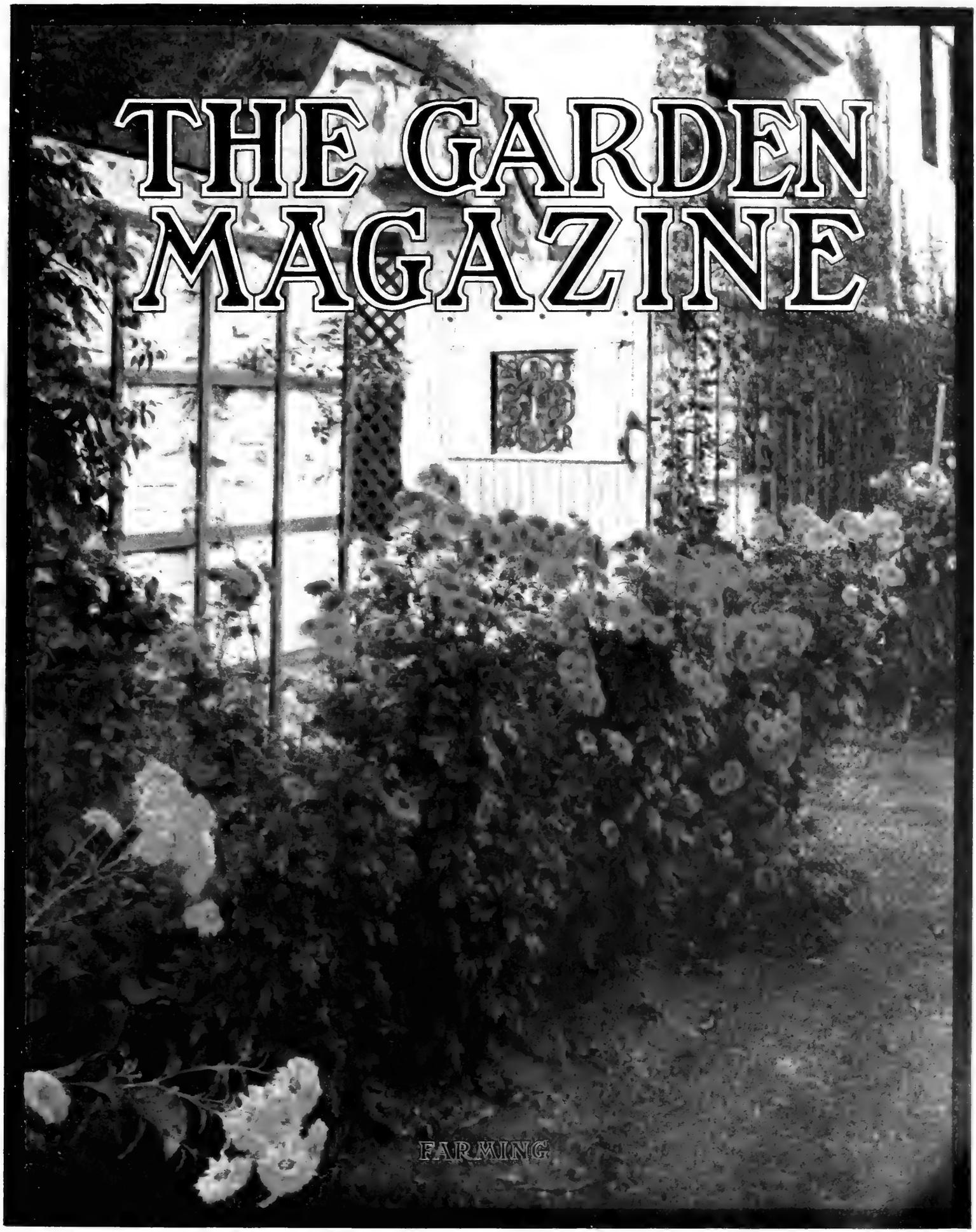
THE GARDEN MAGAZINE



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Chicago GARDEN CITY, N. Y. New York

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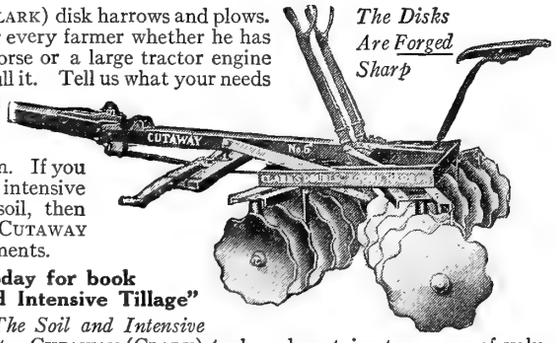

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THE TALK OF THE OFFICE

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

Laddie Again

We can't resist telling a little more of what happened to Mrs. Gene Stratton-Porter's new novel, "Laddie. A True Blue Story," which was published, as we announced, August 17th.

For one thing, no book, or at least no book that we can recall, ever had the friendship of the bookdealers so strongly and so enthusiastically. During the week some 800 stores, scattered over the United States from Maine to California and from Alaska to Florida, made a "true blue" window display of "Laddie."

George Robertson & Co., of Melbourne, published and displayed it throughout all Australia and New Zealand, where the book had been shipped almost two months in advance. Within two weeks of the publications cable orders for 3,000 more were received. In England Mr. John Murray issued the book in a large edition, and Thomas Langton spread the Laddie Blue color over Canada by another large edition. At all events, within three weeks of publication 210,000 copies of "Laddie" had been sold, and up to the present writing the presses have not caught up to the demand.

Perhaps it is worth while to mention in this connection what one large dealer who is not supposed to be especially squeamish said:

I have bought a good many thousand copies of "Laddie" and have sold them with special satisfaction at this time when so much of what we are called upon to handle is of the kind I don't take home or expect my family to read. The larger and more lasting success of Mrs. Porter's books shows that the great majority of people want clean books."

The Master Workers

The publishers of the *World's Work* have made a set of four volumes of a quite extraordinary kind to sell only in connection with a year's subscription to the *World's Work*.

The books are entitled The Master Workers, and these are the authors:

John D. Rockefeller — Andrew Carnegie
James J. Hill — President Wilson

Gathering in a Harvest of Rye at the Country Life Press Farm, Garden City, L. I., July, 1913

If we were only fortunate enough to get some millions of the upgrowing people of this country to read them and ponder the wise, sane, and helpful suggestions they contain, we should do this country a great service; but we expect them to get 100,000 readers if not a million, because the four volumes are easy to obtain and will be appreciated. The set will be sent express paid, with a year's subscription to the *World's Work*, for $3, and 50c extra for packing and expressage — $3.50 in all.

To order these is not much of a chance to take. The remittance will be returned if the books are unsatisfactory, and the offer applies both to new and extended subscriptions.

Two New Sets
Booth Tarkington, Stewart Edward White

These two new sets are ready: Tarkington in six volumes and White in ten, and the price is low, the terms are easy, and the pleasure lasting. Send for a circular.

The Book about Country Life Press

Some months ago we announced this book and offered to send it to any reader who was interested. It is a good book of its kind — a little egotistical, perhaps — but an attractive piece of book-making prepared by Mr. Walter Gilliss. Many people responded, but it has been delayed and has only just now come off the press. If you would like a copy, let us know.

In Our Authors' Booklets Series

we have these now ready:

The Kipling Index, covering all his stories and poems issued in his authorized editions — a Kipling pathfinder.

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All sent with our compliments if you write.

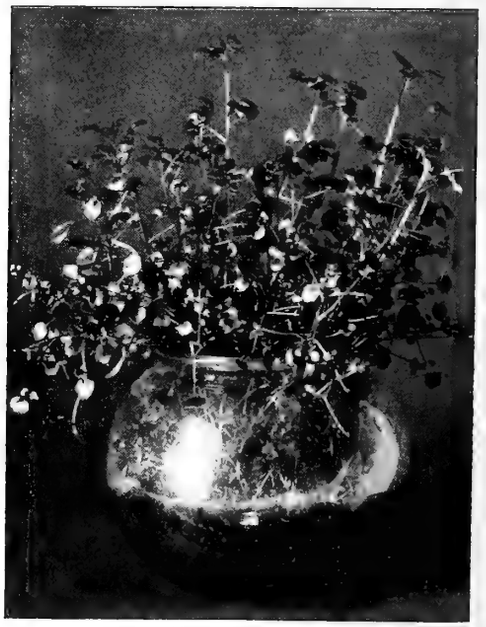
The Christmas Number of Country Life in America

One of the editors of *Country Life in America* said in an office conference: "We always say that the Xmas Annual is going to be the best ever — but it's true for sure this year." Ready November 25, 1913.

Grow Your Own Cress

CRESS is very easily grown indoors. Several years ago, as an experiment, I sent for a packet of seed of each of the three kinds listed in the catalogues. Upland cress is valuable for garden culture; the seeds are black, about as large as mustard seed, and they germinate quickly. The Extra Curled variety makes the most attractive garnish of any of the cresses; the seeds are somewhat flat and reddish in color, germinating in three or four days. This sort should be sown at least once a month as it has a tendency to run to seed. The more cress is cut the faster it grows.

Water cress is more difficult to grow, the seed being very fine and slow to germinate. Few of us have streams of running water where water cress delights, but it can be grown without, as in tubs or boxes of soil which can be kept quite wet. [It can also be grown quite successfully in the garden border where water can be given frequently from



Have a "cressery" like this as a living ornament for your dining-room table

a hose, and it will thrive quickly on the ground under the benches of a greenhouse. We have grown it both ways.—Ed.] I find the glass globes used for gold fish the nicest possible thing. The globes are nearly one-third filled with clean, coarse, wet sand. The seed is simply sprinkled on top of it and a piece of glass is laid over the globe. The seed germinates quickly—one can almost see the tender green shoots grow. All of the cresses root very easily from cuttings. The smallest piece broken off and placed in water will send out roots and grow as thriftily as in soil.

A finger bowl of clear glass filled with short sprays of cress forms a lovely receptacle for early spring flowers, such as snowdrop, scillas, primroses or pansies. I usually keep several of these dishes of cress for table decoration.

New York MRS. E. E. TRUMBULL.

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NOVEMBER, 1913

SUBSCRIPTION:
$1.50 a year
Single copies, 15 cts.

Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879

F. N. DOUBLEDAY, President HERBERT S. HOUSTON, Vice-President S. A. EVERITT, Treasurer RUSSELL DOUBLEDAY, Secretary

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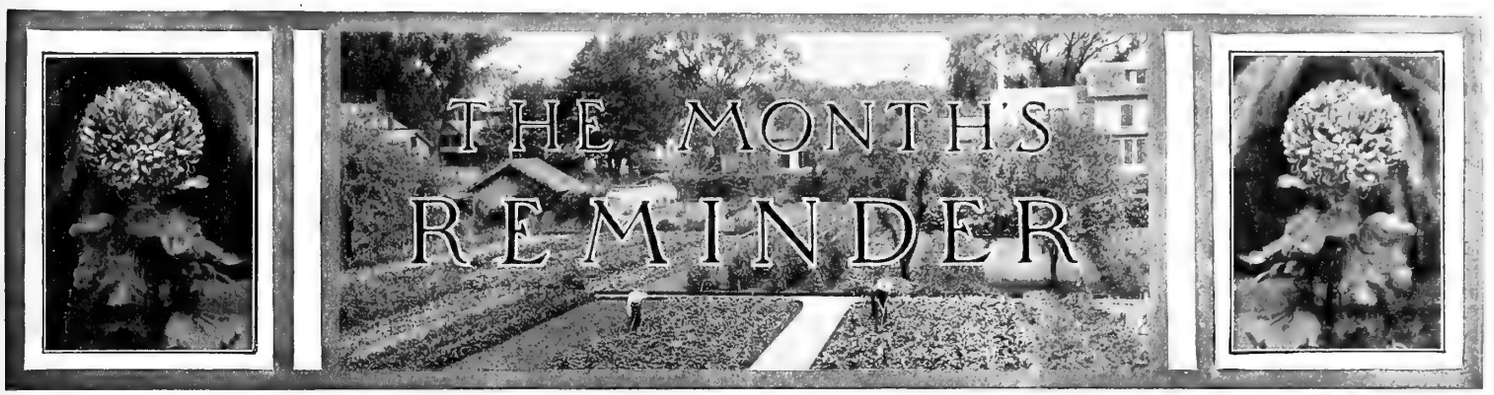
The Garden Magazine

VOLUME XVIII NOVEMBER, 1913 NUMBER 4



GARDEN work is scarce in November, but what there is, is decidedly important.

Those bulbs that were delivered late must go in now or the risk be taken of their spoiling by next spring.

If you enjoy experiments and want to try fall sown sweet peas, now is the time to plant them. Strictly speaking, this is no longer an experiment. A year or two ago one of our leading seedsmen would have been entirely without sweet pea blooms in his trials, on account of poor spring conditions, if it had not been for his fall plantings.

Visits to chrysanthemum shows ought to be charged up as garden experience. For the sincerely interested the winter floral exhibitions are invaluable.

Protect young evergreens, especially newly planted ones, from severe winter winds. Detailed directions and photographs of actual examples may be found in THE GARDEN MAGAZINE for November, 1902, 1906, 1908, and elsewhere in this issue.

Cabbage, corn salad, spinach, parsley, and other vegetable crops that grow all winter, should be mulched like the hardy border. Study the principles of winter protection given below.

Tender varieties of blackberries and raspberries need more than mere mulching. Bend the tops over, hold down with earth, and cover the whole plant with straw, etc.

Winter pruning has two general effects: (a) the stimulation of growth next spring; (b) a shaping of the head of the tree. Begin now and do the work slowly, carefully, and with a definite reason for every cut.

Of the many lovers of trailing arbutus, but few think of it save as a wild flower that cannot be grown in the garden. True, it is hard to start from seed. But why not try November taken cuttings? Root in sand, where the night temperature is below 50 degrees, water about twice a day, and shade during the middle of the day. In about six weeks there ought to be some worth potting. Handle the root ball very carefully, and pot in a mixture of leafmold and sand.

Some people are not satisfied with the barberry even after it gives them bright yellow flowers in spring, brilliant green foliage all summer and bright red berries all winter. Some such enterprising soul has discovered that the berries yield a juice which, when sweetened and diluted, adds a delightful acidity to cold fruit drinks.

Lily-of-the-valley clumps can be divided right up to freezing time.

For winter forced rhubarb and asparagus, dig up some roots now and pack away in a cold corner of the cellar with some sand. By the 25th of the month begin to force the roots for Christmas dinner.

The weapon of the cranberry grower against destructive early frosts is plenty of water. See that the pumps are in order and the pipes clear. Then, when need arises, flood the bog and hold the temperature up a bit.

The reason winter winds seem so much stronger than summer breezes is that they are not checked by the barriers of leaves. For this reason newly planted ornamentals need to be staked now even if they were safe all summer.

Composting vs. Burning

PERHAPS you can sympathize with the puzzled correspondent who writes as follows:

"In the September GARDEN MAGAZINE you advise burning the asparagus tops and all other garden litter. But I have recently read somewhere that all such material, including weeds, should be saved, and composted and used later on as fertilizer. What is the best thing to do?"

All kinds of garden litter cannot be treated alike, nor the same kinds in different gardens, on different soils. Asparagus tops, for instance, like corn stalks, are coarse, woody, and would take at least two years to decay to a usable state. On the other hand, cabbage leaves, etc., contain so much moisture that their manurial value is almost nil save in the case of a very great quanity. This gives one basis for classification.

As to weeds, if the seeds are not ripe, compost them by all means; otherwise, it is safer to burn the plants to insure the destruction of the seed.

The health of the material is an important fact. All diseased specimens should be burnt as soon as possible, rather than allowed to spread their seeds and perpetuate the trouble.

Lastly, certain rich, fibrous loams may contain such generous amounts of humus as to render unnecessary the trouble of making compost every year. In fact, the ashes may prove more valuable than the more nitrogenous compost. On light, sandy soils, however, considerable trouble in increasing the humus content is justifiable.

In other words, use your judgment and handle the various materials in such a way as to bring out their greatest possible efficiency.

Insects and Diseases to be Fought

TO LET the sleeping dog lie is well enough; but the sleeping insects and the dormant plant disease are the legitimate prey of every gardener, and winter is the time to catch them off their guard.

As the leaves fall and the bare twigs and branches begin to stand out against the sky, these are the signs to look for and the attentions they require:

Cocoons. Everybody knows what these look like. Inside each one is a potential parent of countless crawling, devouring caterpillars. Therefore, destroy them all. You may include a few harmless forms, but unless you are an entomologist and know them all by sight you cannot afford to pick and choose.

Oval, flattened, whitish, downy egg masses of the gypsy moth, plastered against smooth spots on tree trunks, stone walls, rail

fences, old tin cans, bits of wood, etc. Paint each one with creosote and its career is over.

Cylindrical, brownish, glistening egg masses of the tent caterpillar wrapped around slender twigs and apparently varnished there. Prune these off, twigs and all, and burn them.

Irregular, white, frothy egg masses of the white tussock moth covering the discarded cocoons on bark or dead leaves. Burn these too. When you come to know this cocoon and find it in winter still occupied, and lacking the frothy covering, leave it alone for parasites are probably at work on the pupa inside and will help you in your next summer's work if left alone.

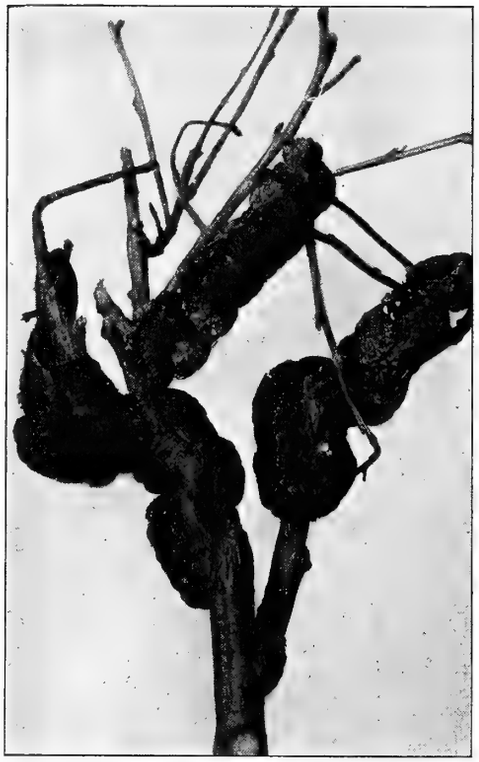
Small, crumpled silk covered leaves attached to apple twigs by strong slender threads are the winter homes of the apple leaf crumpler, and should be at once pruned off and destroyed.

Large, coarse, grayish webs or "tents" of the fall web-worm, especially on apple and ash. These, being built in autumn and still inhabited, are fresher and plumper than those of the tent caterpillar. Burn them wherever found.

Clusters of dead leaves bound together and held to the tips of branches by silk — the winter nests of the brown tail moths. Quick! Prune off and burn them, every one.

Irregular, hard, rough, black swellings on branches and twigs on stone fruits, especially wild cherry, indicate black knot disease. Cut out and burn. Also, destroy all wild cherry trees that cannot be given attention and protective treatment.

Round, dry, brownish, "cedar apples" of wild cedars and junipers are one result of the apple rust fungus and help to spread it. Destroy these, and where apples are an important crop, it would be well to cut down all cedars and junipers within half a mile.



Now is the best time to attack the black knot disease of the fruit trees. Cut off, and burn at once, all affected branches, or remove entirely badly diseased trees.

All cavities and injured places are liable to contain disease germs, decay organisms, etc. Clean them out, cut back to sound wood, disinfect and fill with cement, if likely to hold water; otherwise cover the healthy surface with tar or paint.

Making Winter Protection Protect

MOST "bad luck" in the garden is the result of over doing. Over crowding, over planting, over spraying, over pruning are common; over feeding is rarer. But just about now over protecting is the worst and most common mistake.

This comes, ordinarily, from trying to produce a natural result in an artificial way. Many of our garden materials, having been brought from warmer climes and milder conditions, require some sort of winter shelter. But intermingled with them in most plantings are so many of our native hardy sorts that, in protecting the former, we are very likely to smother the latter.

Dormant plants require air no less than actively growing ones. Therefore, the protection should be porous and not too heavy.

In most cases, it is not cold but frequent variation from below freezing to above that winter kills. Therefore, the protection should be a non-conductor that will maintain a constant low temperature.

Actual freezing of plant tissues results from excessive moisture; therefore, the protection should be loose, and a non-conductor of water as well as of air.

All plants should go into winter thoroughly ripened. Therefore, avoid stimulating late fall growth, and delay covering until the lowest temperature the plant can stand has *almost* been reached.

Where unbroken cold weather can be expected, loose, dry snow is the ideal protection. Desirable substitutes are straw, corn stalks, leaves, and pine needles. But they must not be allowed to become soggy, compact and frozen into a solid mass, or they will do more harm than good.

News Notes and Comments

STORING FRUITS AND VEGETABLES

JUST about this time every winter a certain number of housekeepers and gardeners begin to bemoan the spoiling of their winter supply of vegetables and fruits in spite of all their precautions. The trouble usually is that these precautions have been misdirected or based on a wrong conception of the principles of winter storing. Even now some suggestions may help to save this season's crop besides helping toward better results in 1914.

1. Store only first quality material gathered in the best possible condition and handled with the utmost care. A single bruise or scratch may result in complete loss by spoilage.

2. The cellar, store house, or pit must be well ventilated, that cold air may drain in and down and warm air up and out. In a cellar, air-shafts are most satisfactory; in a trenchor pit, a stove pipe or a wisp of straw running through the roof will serve.

3. The temperature *must* be below 50 degrees F. and should be about 33 degrees. Turnips, parsnips, salsify, cabbage, and onions will stand some degrees of frost without injury.

4. The temperature must not fluctuate. An unvarying temperature of 50 degrees is infinitely better than one that wavers between 30 degrees at night and 60 by day.

5. The atmosphere and the soil (when vegetables are packed therein) must be kept moist. Less than 85 or 90 degrees of humidity will invariably result in dry, shriveled products.

6. Apples and pears keep best if wrapped individually. They may be stored in boxes, barrels, crates, or on trays, with equal success, provided they are carefully handled.

7. Late, firm varieties may be buried in pits lined with clean straw and leaves.

8. Vegetables differ in keeping quality and in their special needs. The following sets of conditions suit certain groups.

A. Air and soil moist, temperature, uniform, between 30 and 50 degrees F.: beets, turnips, kohlrabi, winter radish, carrots, potatoes, and cabbage.

B. Air dry, temperature, 30 to 35 degrees, steady frost not undesirable: onions.

C. Best if left in soil, but can be stored in pits under class A conditions: parsnips and salsify.

D. Protect where grown or pack in pits: celery, leeks, and parsley.

E. Air dry, temperature preferably 50 degrees or over: squash, pumpkin, and sweet potatoes.

9. Alternate freezing and thawing will destroy any fruit or vegetable.

10. In all pits and trenches provide perfect drainage.

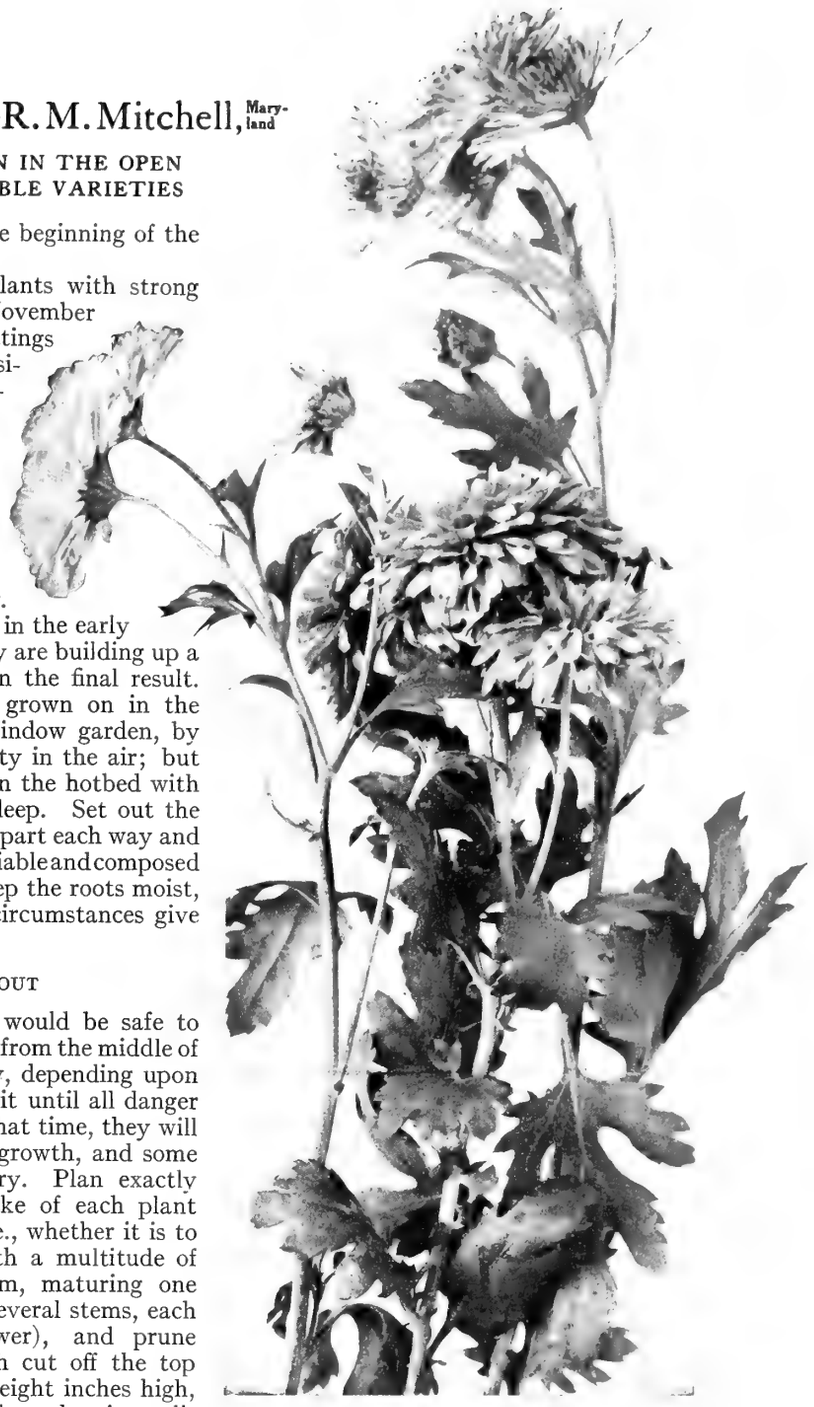
11. Ventilate pits until potatoes, etc. have ceased sweating. Then cover with soil or manure to keep out frost.

Chrysanthemums Without Glass—R. M. Mitchell, Maryland

THE LARGE FLOWERED TYPES SUCCESSFULLY GROWN IN THE OPEN —THE YEAR'S ROUTINE— SELECTED LIST OF AVAILABLE VARIETIES

I HAVE been quite successful in raising the larger flowered chrysanthemums without the aid of glass. I have tried nearly every variety that has come to my attention, and I have made a selection, from the whole, of those that can be handled most easily because they seem to have hardier or more sturdy constitutions. In the table which accompanies this article I have selected those varieties which I have found to be preëminently the best. Of course, in other sections these lists may be somewhat modified, and farther north the list may have to be reduced. Only experience can tell. I recommend those who live north of Baltimore to use only the early blooming varietes for outdoor cultivation, lifting the plants and potting them just before they come into full bloom. If late varieties are used, they would have to be potted considerably in advance of their blooming dates. Farther south than Baltimore even much later varieties could be used. The man who has a greenhouse available can simply suit his own fancy in selecting from the host of varieties to be seen on exhibition tables; but I and a good many other readers of THE GARDEN MAGAZINE, must confine our attention to these hardier types. I no longer envy the greenhouse owner the fine blooms he has in the fall. I have them myself, and so can you, too, if you will but devote just a little time to the plants every day from the beginning of the season in January.

Really good sturdy plants with strong stems and foliage in November are the result of cuttings rooted in January, if possible, but at all events before the middle of April. You can get flowers from cuttings rooted as late as July and under favorable circumstances even in August, but these later plants will be small and lacking in vigor. It is the steady growth in the early spring months, when they are building up a root system, that tells in the final result. Young cuttings can be grown on in the dwelling house in the window garden, by keeping sufficent humidity in the air; but better still, plant them in the hotbed with soil about eight inches deep. Set out the young plants ten inches apart each way and have a soil that is loose, friable and composed largely of leafmold. Keep the roots moist, not wet, and under no circumstances give fertilizers at this stage.



The decorative value of the naturally grown flowers is very great. They are small, but borne in profusion

PLANTING OUT

North of Baltimore it would be safe to set the plants in the open from the middle of April to the first of May, depending upon weather conditions. Wait until all danger from frost is past. By that time, they will have made considerable growth, and some pruning will be necessary. Plan exactly what you expect to make of each plant before you set it out; (i. e., whether it is to be grown as a bush with a multitude of flowers; to a single stem, maturing one enormous flower; or to several stems, each to produce a large flower), and prune accordingly. For a bush cut off the top when the plant is about eight inches high, allow the three or four branches immediately below the cut to grow until they are about six inches long, then cut off their heads. Continue this process until about August 10th, but not later.

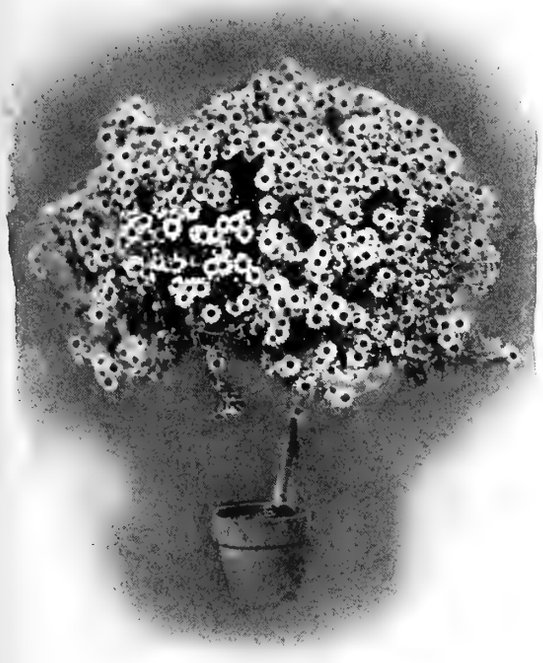
For a single stem, all branch growth must be pruned off as fast as it appears.

If the plant is to carry more than one bloom, pinch out the centre when it is about eight inches high, allow the development of the number of breaks (branches) that you desire to bloom, and keep them, as well as the main stalk, free from any further branches.

INCREASING THE STOCK

The larger cuttings thus taken off may be used to increase your stock of plants. Prepare a flat with clean sand, to be kept moist at all times; insert the cuttings in this sand, pressing it firmly around them. Cut off all leaves but the pair at the top of the cutting, and shorten these to about half their size (this to reduce the evaporating surface). Keep the flat in a sunny place, at a temperature of from 50 to 70 degrees. F., and in from eight to twenty days, depending upon the variety, your cuttings will be rooted, and ready to transplant.

Plant out in a sunny location, and allow at least two feet each way between the plants. The ideal soil is a light loam, with plenty of leafmold worked in. A stake, four to six feet high (depending upon the variety), should be driven firmly into the ground close to the stem of each plant as it is set out, and as the plant grows it should be tied to its stake at intervals about a foot apart. Be sure that the stake does not



Plant of single chrysanthemum Catherine Livingstone, three days after being lifted into a pot

extend above the bud when the latter is formed, as the expanding flower would be disfigured by it.

A handful of bone meal, worked into the soil around each plant after the plants have become established, will be beneficial; but in general use very little fertilizer until after the buds are set.

From this time on until the setting of buds give close attention to watering, pruning and tying. Never let the plants suffer for water, and keep the soil around them open by frequent cultivation. Water in the evening and cultivate the following day after the surface of the soil has become dry in the sun. Cultivate just as you would vegetables. The plants which you are growing for bush effects will probably require some staking and tying out, to make them sufficiently symmetrical.

Frequently during May the nights become quite cool, and if these cool spells occur after the chrysanthemums have been set out, you may find that a number of varieties have set flower buds. These buds are abortive, and of no value, and must be pruned off at the expense of straight stems. Such an occurrence would be nothing short of a calamity, were the plants being grown for exhibition purposes, where every point counts; but as it would be very difficult to mature exhibition blooms out of doors, there is no need to be discouraged, for should it be necessary to decapitate a number of plants, on each of which you hope to develop one enormous flower,

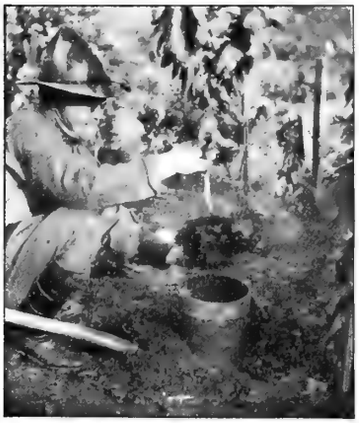
TABLE OF CHRYSANTHEMUMS THAT HAVE DONE BEST OUTDOORS

NAME	COLOR	FORM	Year Introduced	Blooms	REMARKS
DOUBLE FLOWERED VARIETIES					
Beauty of St. Kilda	Rosy amber; reverse silver	Reflexed with covered centre	1909	Oct. 15–30	Large foliage and enormous flower.
Cheltoni	Light yellow	Irregular Japanese incurved, narrow whorled petals	1904	Oct. 20–Nov. 5	Good wiry stem. Will give beautiful effect even when not disbudded.
Chrysolora	Yellow; reverse same	Japanese incurved	1911	Oct. 15–30	Fine stiff stem, good foliage and magnificently formed flower. One of the best.
Dick Witterstaetter	Bright velvety crimson	Japanese reflexed, whorled centre	1911	Sept. 20–Oct. 30	Early buds give poor color with yellow reverse. Terminal buds best. Exceptionally striking.
Donatello	Bright yellow	Ball shaped, incurved	1910	Sept. 20–Oct. 30	Perfect flower from any bud. Very wiry, dark brown stems. A most satisfactory early variety.
Driftwood	Chamois	Reflexed; deep flower	1911	Oct. 10–30	Fine large foliage and enormous flowers of unusual shade.
Glenview	Dark bronze. Indian red lining	Japanese incurved	1906	Oct. 20–Nov. 5	Fine stem and foliage. Tall early buds give poor color and sprung centres. Take terminal bud.
Harvard	Very dark crimson	Japanese reflexed	1912	Nov. 5–15	Good stem and foliage. Tall. Terminal buds best. Excellent color.
Lenox	Bright yellow. Reverse lighter	Irregular Japanese incurved. Whorled centre.	1911	Oct. 1–30	Very double, magnificently formed flowers. Limp stem; needs good support.
Miss Clay Frick	White. Occasional pink lines	Japanese incurved	1907	Oct. 20–Nov. 10	Fine stem and foliage, and beautifully formed flower. Take terminal bud.
Patty	Enchantress pink	Japanese incurved	1909	Oct. 25–Nov. 10	Fine stem and foliage and beautifully formed flower.
Pockett's Crimson	Crimson with gold reverse	Japanese incurved	1909	Oct. 15–Nov. 5	Short jointed stem; excellent foliage, and very showy bloom. One of the best.
President Taft	Pure white	Japanese incurved. Narrow petals, slightly whorled	1909	Oct. 15–Nov. 5	This is one of the best whites. Terminal bud best.
T. Carrington	Amaranth; lighter reverse	Japanese incurved	1900	Oct. 25–Nov. 10	Good foliage and magnificent flower, but of a shade that does not harmonize readily with some others. It goes well with pinks and white.
Wm. Duckham	Light silvery pink	Japanese incurved	1904	Oct. 15–Nov. 5	Fine stem and foliage, and beautiful flower. One of the best pinks. Take terminal bud.
SINGLE FLOWERED VARIETIES					
Arlee*	Golden amber. Effect of orange at a distance	Paris daisy, 1 row petals	1910	Oct. 20–Nov. 10	Large flowering section. Upright growth. An excellent bush plant. Rather dwarf.
Catherine Livingstone*	Rosy lavender, slightly streaked	Large cosmos, 4 rows petals	1910	Oct. 20–Nov. 10	A beauty. Large flowering section. Medium height.
Clea*	Light pink	Paris daisy, 1 row petals	1912	Oct. 20–Nov. 15	Very tall, fine stem and foliage, and upright growth. Large flowering section. Admirable for large specimen.
Itaska*	Pink	Pond lily. Semi-double incurved	1910	Nov. 1–15	Most beautiful in form and color. Large flowering section. Fairly tall. Excellent bush plant.
Lady Lu*	Pure white	Large cosmos, 2 rows petals	1909	Oct. 25–Nov. 10	Tall; upright growth. Good stem and foliage. Large flowering section. Excellent bush plant.
Ladysmith	Salmon pink	Daisy, 2 rows petals	1907	Oct. 15–Nov. 5	Beautiful color, very bushy and floriferous. Finely cut foliage. Medium flower and height.
Lillie Godfrey*	Pale pink. Buds rosy lavender	Large daisy, 3 rows petals	1910	Oct. 20–Nov. 10	Exquisite flowers. Limp stem. Rather dwarf. Medium sized flowers.
Peter Pan*	Chamois	Daisy, 2 rows petals	1910	Oct. 15–Nov. 10	Excellent bush plant. Roots very close to surface of soil. Medium height and size of flower.
Red Light	Brilliant crimson	Large daisy, 1 row petals	1911	Oct. 25–Nov. 15	Brilliant and showy. Medium flower. Fairly tall. Very floriferous. Excellent bush plant.
Reginald Godfrey*	Rich yellow	Paris daisy, 1 row petals	1910	Oct. 20–Nov. 10	Fine bush plant. Medium height. Large flowering section.
ANEMONE FLOWERED VARIETIES					
Ada Sweet*	Silvery pink throughout	Large rounded centre. Quilled petals	1909	Oct. 15–Nov. 10	Good stem. Upright growth. Dwarf. Large flowering. A fine variety.
Garza*	White rays. Yellow centre	Long, quilled petals. Large centre	1894	Oct. 20–Nov. 10	Upright growth. Medium height. Large flowers. Excellent bush plant. One of the best. Good foliage.
Miss Katherine Simmons*	Soft pink. Yellow centre	1 row loose quilled petals	1909	Nov. 1–20	Medium height. Large flowers. Beautiful coloring. Fair stem.
Satisfaction*	Old gold and bronze. Yellow centre	2 rows curved petals. Trumpet shaped centre florets	1894	Nov. 1–20	Tall. Large flowering and showy.
Surprise*	Rose pink, streaked lighter. Yellow centre	Slightly incurved petals. Large centre	1892	Oct. 20–Nov. 10	Very large and beautiful flowers, but poor stem. Dwarf.
POMPON VARIETIES					
Alma*	Lavender pink	Pompon	1907	Oct. 20–Nov 10	Medium height. Large flowers. Very floriferous. Beautiful coloring. One of the best.
Diana*	Pure white	Pompon	Prior to 1886	Oct. 20–Nov. 10	Medium height. Large flowers in abundance. Good stem and foliage. One of the best.
Iva*	Pure amber	Pompon. Fimbriated petals	1908	Nov. 1–20	Dwarf. Very floriferous. Medium flower. Excellent color.
Minta	Light pink	Pompon	1911	Oct. 15–Nov. 10	Tall and very floriferous. Beautiful color. One of the best.
Quinola *	Orange yellow	Pompon	1901	Nov. 1–20	Dwarf. Late. Good stem and foliage, and medium flower. Excellent color, contrasting well with leaves.

*All the anemones, singles, and pompons marked with an asterisk (*), should be partially disbudded to get the best effects.

For potting, dig around about one foot from the plant with the tool at an angle of 45 degrees

Using the fork as a lever gently raise the plant with its ball of earth. Have the pot close by



Carefully reduce the size of the ball to properly fit the pot. An 8-inch pot generally suffices

After tamping place pot in a pail with enough water to soak up. Do not fill above rim of pot

simply save the topmost branch and in the three months that the plant has still to grow before setting normal buds, that branch will have grown perfectly erect and the point where it joins the main stalk will simply be marked by a slight thickening.

The chrysanthemum has a period of growth, a period of bloom and (normally) a period when it is dormant, and these are not interchangeable at the will of the grower. During the period of growth, should the temperature fall below about 50 degrees F., then look for buds, for this is nature's signal to the chrysanthemum that winter is approaching and it must prepare to reproduce itself. The cold weather checks growth, and buds follow; hence the abortive May buds.

TAKING THE BUD

This is an old term, and means pruning off all buds except those you wish to save for bloom. The plants will set buds at various dates between August 1st and September 1st, depending upon the variety and the latitude and altitude where they are grown. For the best date to disbud, consult the catalogue of some specialist where you will find carefully listed all such important data. If possible let your date be within five days either side of that given by him. Strange as it may seem, the date of "taking the bud" bears an important relation to the color and frequently to the shape of the blooms which are allowed to mature.

Now is the time to commence feeding in earnest, and under no circumstances neglect this important feature. To any one unfamiliar with the handling of concentrated fertilizers, I suggest pulverized sheep manure as a safe and lasting stimulant. Apply it at the rate of about a pint to a plant every two weeks from the time the buds are set until the color shows in the bud, but *not* thereafter. Work it into the soil around the plant with a small rake or a dibber. Watch for suckers from the roots and cut them off as they appear, for they will rob your buds of nourishment.

LIFTING THE PLANTS

Chrysanthemums may be shifted about with impunity. When the buds are about two-thirds open, carefully lift such plants as you desire to have bloom in the house or conservatory, and pot them in 8 to 12 inch pots or tubs depending upon the size of the root systems they have formed. If this operation is done with care, and the plants given a good watering as soon as potted the blooming should not be delayed at all. I have lifted plants when they were in full bloom and to all appearances they were not disturbed at all.

If the plants have been grown in a light soil lifting need cause you no apprehension, for the chrysanthemum is a surface rooter, and its roots will not extend very far downward if they have plenty of room laterally and can find sufficient food in the top soil.

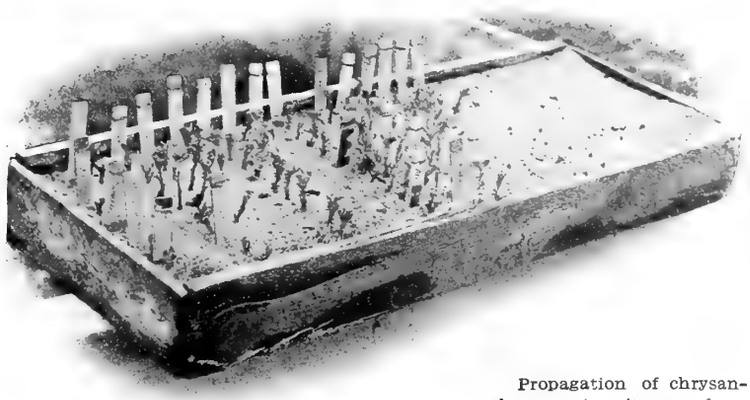
A spading fork is best for this. Push it full length into the soil, about a foot away from the plant and at an angle of about 45 degrees. Loosen the soil all around the plant in this manner, and then, using the fork as a lever, raise the plant out of the ground. Have the pot close by, and in the bottom of it place pieces of crock and two or three inches of loose soil. With your fingers, or a small toothed implement, scrape a sufficient amount of soil from the roots to make the plant fit easily into the pot; then place the ball of roots in the pot, fill in with soil up to about an inch of the rim, and firm down well with the hands. Now place the potted plant in a bucket or tub and fill the container with water up to the rim of the pot, but not above. As the water is absorbed, fill the receptacle again to the mark, and repeat this until the soil in the pot is saturated and of the consistency of mud. Now remove the potted plant from the bucket or tub and set it in a cool, dark place for twenty-four hours, when it can safely be placed in the shaded portion of a living room. In two more days it can be placed in the direct sunlight. Chrysanthemums potted in this manner should go right on blooming and never show the least sign of wilting, even if lifted while in full bloom.

STORING THE OLD PLANTS

After it has bloomed, cut off the plant to about two inches from the ground, dump it out of the pot (if potted) and place it in a coldframe. (Be sure to label it.) The old roots may be planted in the coldframe, or simply laid on the surface of the soil, but see that they have fairly good balls of earth.

A few degrees of freezing will do no injury but in very severe weather cover the frames at night with some protective material, such as boards, sacks, etc.

Do not water your plants much during the winter; keep them on the "dry side." Later you will find that each old root will send up shoots which can be used as cuttings when they are sufficiently large.



Propagation of chrysanthemums is quite easy from the old roots in spring. Don't forget to label properly

Why the Black Walnut Is Worth Growing

By A. Rutledge, Pennsylvania

PROFITS IN NUTS AND IN LUMBER—SOME REASONS WHY THE TREE SHOULD BE PLANTED WHENEVER THERE IS ROOM FOR IT

GROWING nuts for commercial purposes has made great strides during the past few years. In the South, thousands of acres have been set in young pecan trees, and some of these nut groves are now paying handsomely. Notable among such tracts are the great Bacon orchards at DeWitt, Ga., the splendid Barnwell orchard, just south of Albany in the same state, and the 500-acre Horlbeck grove across the Cooper River from Charleston, S. C.

Undoubtedly the pecan is the most profitable of our native American nuts to grow; but it is decidedly a native of hot climates, and will never succeed in the North so well as it does in its natural environment. The shellbark (*Hicoria laciniosa*) is generally considered the best all-round nut for the farm, and the timber is quite valuable. The shellbark, however, does not prosper in the South, save in the mountainous parts, and especially in Southern Missouri and Western Kentucky and Tennessee. The nut has such a thick shell that it is not really very desirable, although good. It retails in the market for about one dollar a bushel. The shagbark (*Hicoria ovata*), at its best in the North and East, is one of the finest of nuts, commonly thin shelled, and retails often at five dollars per bushel. More widely distributed than either the pecan or the shellbark, as certain to crop as either, and far more valuable for timber, is the common black walnut (*Juglans nigra*).

There are five species of walnuts (and possibly seven, the last two not being classified as yet) native to American soil: the common black, the white or butternut (*J. cinerea* (the California black, the Mexican or Arizona walnut, and *Juglans major*. At least three others have been pretty widely introduced in various parts of the country, but more especially on the Pacific Coast. These are the Persian, commonly called English (*J. regia*) and the two Japanese kinds, *J. cordiformis* and *Sieboldiana*. Of these walnuts, the Persian easily ranks first as a money-maker; the common black and its California cousin probably ranking, at this time, second for sound worth, popularity, and value of nuts and timber.

Between the Eastern and Western species of black walnut there is no great difference; the Western tree has a habit of branching and spreading lower, and its nuts are much smoother than those of the Eastern black walnut. But the commercial value, tree for tree, is about the same.

It is well for the man who has a place in the country to take an inventory, as it were, of his trees. Let us consider then what is the real value of the common black walnut,(1) as an object of beauty on the landscape, (2) as a nut bearer, and (3) as a tree that affords hardwood timber.

The distribution of the black walnut is remarkably extensive, being almost equal to that of certain hardy oaks and elms. It is at home on the rocky farms of New England, on the dreamy plantations of the South, and on the rolling farm lands of the West. It will grow on practically any soil, and in most situations. Fine trees are often found standing in the middle of a grove of other trees; walnuts will develop well beside streams and on the highest slate hills; they will grow in sand and in the toughest clay. This very hardiness, therefore (which is by no means characteristic of all nut trees), should serve to make the black walnut a prime favorite.

The black walnut does not bear until it is eight or ten years old, and does not attain full bearing strength under about thirty years. Actual growth of the bole and branches may continue for twice that period. I know of walnut trees on a plantation in South Carolina that are eighty or ninety years old. They stand among live-oaks, are very tall and straight, and are still bearing nuts, though not regularly and not in abundance.

It is no exaggeration, however, to say that a good black walnut tree will bear crops for sixty or seventy years, in which time two successive apple orchards would have gone to decay. Nor, with the apple in mind as a comparison, does one have to wait so very long for a walnut crop. Two-year old apple whips out of a nursery will begin to bear in four or five years — that is, when they are six or seven years old. And every apple grower knows that no apple orchard is likely to begin to pay under ten years. Black walnuts do not come in so far behind this, in spite of the fact that they are hardwoods. They are slow growers, like most nut trees; but they are tough and vigorous, and they have practically no enemies.

Every farm and every country place should have its own black walnut trees. They may be conveniently planted along driveways, fencerows, and in pastures, as well as along brooks and streams, and in land too wet or spouty to be planted in crops. Because of the beauty of their shafts and their shade, black walnuts make a fine avenue; their long life also recommends them for such use. Walnuts are highly ornamental, not only in summer when their heavy light-green foliage and their clusters of nuts render them picturesque adornments of the landscape, but more particularly in the winter, when so few trees are attractive. It is then that their bare boughs make one think of the fine "naked strength" that Tennyson describes in "The Oak:"

> "All his leaves
> Fallen at length,
> Look, and stands,
> Trunk and bough,
> Naked strength!"

The very sight of a black walnut is gratifying to a tree-lover's eye. Its noble proportions, its stately and vigorous growth, and its look of clean and stalwart health render it most beautiful and desirable.

Of recent years, the demand for all kinds of timber has increased; and this is particularly true in the case of the black walnut. The prices paid for fine sticks of walnut are often surprising. Only during the past year a representative of a furniture manufacturing concern in Germany passed through southern Pennsylvania, selecting and buying black walnuts. For many prime trees he gave as much as $60, and for one extraordinary old giant, that was growing close to the Potomac on the Maryland line, and that gave three twenty-foot sticks, $140 was paid. The butt of this tree was 58 inches in diameter; the tree must have been at least a century old.

Men who have land in the country naturally take a keener interest in the value of those trees on property which they might sell. They are also glad to know when the planting of trees may reasonably be considered a profitable investment. Among the trees that may be looked to to pay the planter well, the black walnut easily holds a high place; not indeed for those who are forever looking for "get-rich-quick" schemes, but for those who are willing to wait, and, failing to realize a profit themselves, can still be happy in the sure knowledge that their children will reap the benefits of their faith and forethought.

Land that will grow nothing else worth while will grow these fine trees. For ordinary purposes they should be set 40 to 60 feet apart. The nuts should be planted where the trees are meant to stand, as it is a difficult, and often impossible, task to transplant young black walnuts. As with many other nut trees, the tap root is large and very long, and any injury to it may

stunt the tree for years. Trees with long tap roots are the slowest to recuperate from any damage done by mishandling.

It is no uncommon thing for transplanted nut trees to "stand still" for several years after having been set, occasioning a loss in time that no man can afford. In the case of young grafted pecans, which are sold by the thousands from nursery rows, the tap roots are generally severed with a sharp spade while the seedlings are growing, whereupon great masses of fibrous roots to supply the trees' urgent need are put out. Such an operation renders later transplanting easy and safe.

In planting a plantation of black walnuts, chiefly for timber purposes, the nuts may be set as close as eight feet; for it is well known that all trees attain a straighter and taller growth if they are pushed by others adjacent to them. By this method, about two hundred trees can be set on an acre. The expense amounts to nothing except the cost of the land. They can be set out in forest form, and then gradually cleared for post, stake, and timber purposes, with the idea of eventually leaving trees for combined nut and timber purposes. Under these circumstances, the trees which are left will have the combined value of the long trunk and high head which does not shade surrounding land too much.

The nuts should be planted in the fall, being set in holes about four inches deep. The soil filled in on them should be firmly tramped down. As the young trees develop, they should be judiciously trimmed, after they have put out four or more limbs, with a view to developing long straight boles, fit for fine timber. The proximity of their planting will help to keep them from forming low-spreading habits of branching. Growers of white pine for timber purposes set the trees as close as three feet, so that as they develop, the lower limbs are smothered out, and the trees may be said to "trim themselves."

In eight or nine years from the actual time of planting, the trees will come into bearing; and from that time on they will bear with remarkable regularity crops which increase in size until they have reached the maturity of growth, though they are likely to alternate (like most trees) light and heavy crops. These nuts will represent a certain commercial value which is too often disregarded by the owner of the trees. The average man thinks it hardly worth while to gather more walnuts than are needed for home consumption, but to the man who has easy access to an abundant supply, it is certainly worth his time to gather the nuts in the fall, and, when their hulls have become dry enough to be threshed off, to dispose of them in the market.

A single tree will bear all the way from a handful of shelled nuts to several bushels of the same. On the general average, a tree will yield a half-bushel each year; or about a hundred bushels on the acre, worth at least $50 — no mean price to be realized for a crop that costs nothing to grow it and that represents an investment that is yearly increasing in value. Large black walnut trees, not in competition with surrounding trees, sometimes bear more than 20 bushels to a tree.

The wood of the black walnut is one of the finest and most prized of American hardwoods. Considering its grain and texture, as well as its hardness, durability, and willingness to take a high polish, the walnut is really a rapid grower. Moreover, it is a consistent grower, seldom suffering any set-backs or retardings of growth to which most ordinary trees are liable, except under the most extraordinarily unfavorable conditions. Plunging its tap roots and its marvelously long lateral roots deep and wide, its source of food supply is far-drawn and plentiful.

Fine type of the vase-shaped black walnut tree. This specimen at four feet from the ground is 9 ft. 2 in. in circumference. The black walnut grows on most soils, and is profitable for its crop of nuts and for its timber

Because of the comparatively low value of the nuts, very little attention has so far been paid to improving the quality. The few attempts in this direction have been almost solely by selecting and planting large nuts; which, in the case of a tree like the walnut, amounts to practically nothing. It is possible to improve results by annular budding and by tongue grafting, the former giving the better results. It is thus possible to improve the nut orchard by grafting the trees to some one or more varieties of superior character. The grafting or budding of a nut tree requires an exceptional degree of judgment, patience, and skill; in comparison the grafting of fruit trees is elemental in its simplicity.

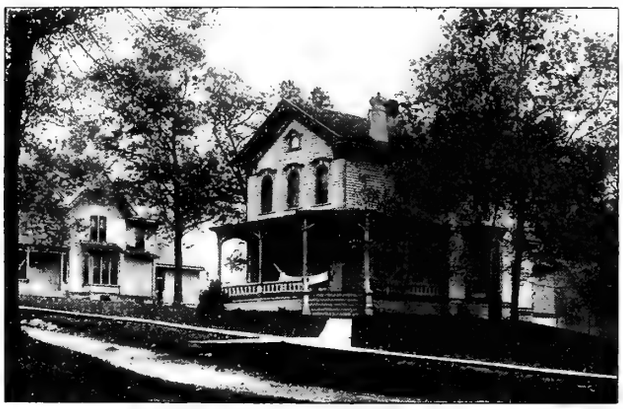
After the pecan (and possibly the English walnut), the black walnut is second to no tree as an asset on the land. If its product is less valuable than that of a fruit tree, its timber is far more so. There are other nut trees now being introduced and developed which may eventually rival the black walnut in value; but at least this tree has proved its worth.

LITTLE LANDSCAPE PROBLEMS

Securing Privacy on a Public Street

By L. C. and E. W. Rockwood, Iowa

MANY of us have little control over the architecture of our homes for we buy or rent what has already been provided by others. If we cannot plan our houses we may each of us, as an artist, experiment with line, mass, composition and color through our shrubs and plants and have a garden representative of the individuality and life of the possessor — something more than a place to raise merely flowers and vegetables. This garden, even if it be but a small enclosure behind a house, may become a larger outdoor living room where the owners may find quiet and beauty without thought of prying eyes.



Innocent of shrubs and vines

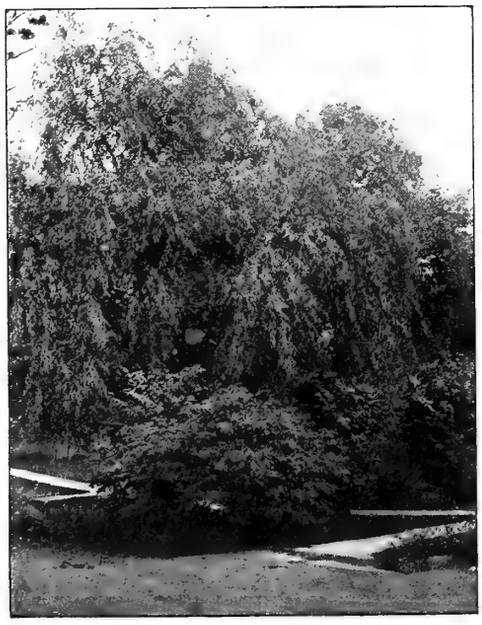
We selected our home because it stood in a grove of native trees on two quiet, unfrequented streets. It was innocent of shrubs and vines, but we secured privacy from the neighbors' eyes on our large veranda living room by planting vines — woodbine first, for it grows rapidly, varied with clematis and Japanese morning glories. Flower boxes on the two sides added to our joy and seclusion, as did also a discriminating use of shrubbery and a weeping willow tree, gaining at the same time a fine playhouse and gymnasium for the small people.

We planted woodbine first

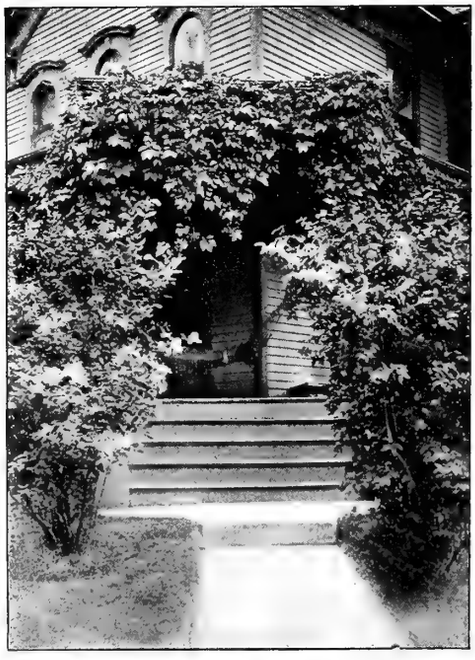
We, however, are not prevented from looking out into the world from our piazza though it is only when the entrance is directly approached that the hammock or its occupant becomes visible.

When we started to beautify our place we had no idea of enclosing the yard in order to gain privacy, which we did not then need. Rather our plan was to beautify the large lawn with shrubs and flowers and leave it open to the public in the usual American fashion. In order to do this we used all the skill and ability at our command in an artistic arrangement of shrubs and plants which could survive the severe winters of the Middle West. As the attractiveness of our lawn increased, our street, much to our displeasure, began to change from an unfrequented one to a much-travelled one. No longer could we lie on the grass or frolic with the children unnoticed. The traffic increased, for the popularity of the drive grew. Next the automobilists demanded paving along the street and a new problem arose — how to secure for ourselves seclusion in a city lot with a much used street on one side and a public drive on the other. We could no longer tolerate an open lawn. We sighed for an inclosed English garden. However, we could not

We were satisfied with the privacy of the cosy interior



A playhouse and gymnasium for the children



Only upon direct approach is the hammock seen

afford a brick or stone wall around our large lot even had we considered it advisable to put it there. Anyway in our little American towns these walls look selfish and inhospitable. But we set to work to secure by shrubbery the seclusion we coveted. How well we succeeded may be seen from a picture taken outside the hedge along the much travelled street, and another just inside it — near to the throng but not a part of it.

The hedge is not a stiff, uncompromising row of a single kind of shrub, as one might think from the photograph of the outside of it. It is rather a succession of artistically arranged clumps of shrubbery of all the varieties which will grow in this climate. Through this hedge, which is about two hundred feet long, the passer-by can get an occasional vista which creates the desire to enter and enjoy the quiet beauty and rustic seats of one part of it, or to take a hand in a croquet or tennis match in another.

The expense of this protection has not been large. We have added a few shrubs each year and have made use of cuttings as much as possible. Not only have we secured the delights of privacy, but our children are being brought up with a knowledge and love of outdoors and growing things which they could not have gained so easily and unconsciously in any other way, for every new shrub has been hailed with delight and its growth carefully watched and noted.

The father is a busy professional man with little time for home life, but the family bond is strengthened when, after each meal, in favorable weather, the whole family, with the dog and cat bringing up the rear, walk about in the grounds and take note of the progress and needs of the trees, and shrubs, and plants. We could not take this systematic and united interest in them had they not been planted with a special design and for a definite purpose — that of securing privacy and beauty for the home nest.

On the public street outside the hedge

We can look into the world

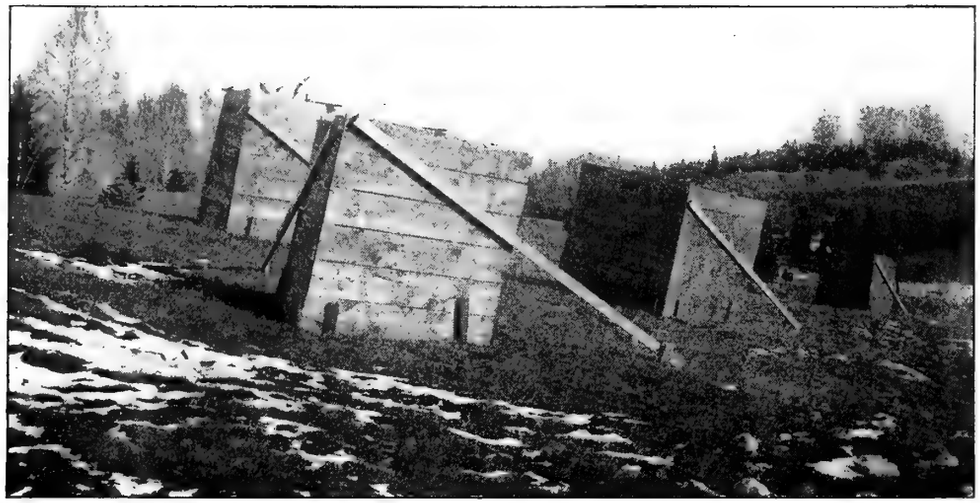
A Shade Loving Plant

JACOB'S ladder (*Polemonium reptans*), mentioned in THE GARDEN MAGAZINE for June, 1912, as a shade loving plant, is indifferent as to soil in Northeast Pennsylvania. It does, if anything, better on loam than on gravel or leafmold, but it will live and flower well anywhere when given shade, or plenty of water instead of shade. It relishes a good sprinkling of nitrate of soda in March, or nitrate in water at any season. It flowers to a day with the old-fashioned *Narcisius poeticus*, which will stand half-shade reasonably well; but the narcissus, so pretty coming through the polemonium clumps, dies under nitrate. The secret of raising *Polemonium reptans* is to sow the seed before it is fairly ripe and without a day's drying. Self-sowing is best unless the ground must be kept stirred for some other plant. Seed gives low germination, because it is a seed not armored by Nature against growth. By E. S. T., Penna.

Near to the throng but not a part of it

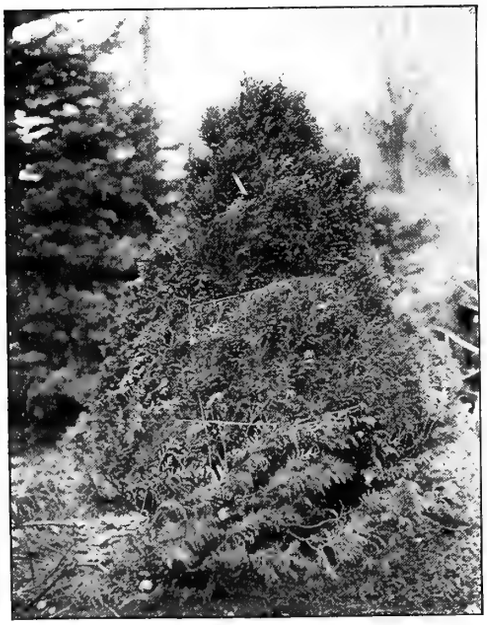
Protection

THE METHODS HERE SHOWN ARE SUGGE
CHANGES OF TEMPERATURE, RATHER
TOO MUCH WARMTH. OVER KINDNESS
WITH SEEDLINGS OF HERBACEOUS PLA
MANY DEGREES OF FROST. SUNSHINE



Wooden wind shields for recently planted evergreens or shrubs in exposed positions. They give protection from winter sunshine and from the prevailing cold winter winds

Rhododendrons covered with hemlock branches laid protected for winter and will



Protect the large evergreens from snow injury by twine drawn in spirally around the branches and tightened up

Even good-sized trees may be wrapped in evergreen branches, and in this way a rare specimen that is not quite hardy may sometimes be grown in a region beyond its usual limits

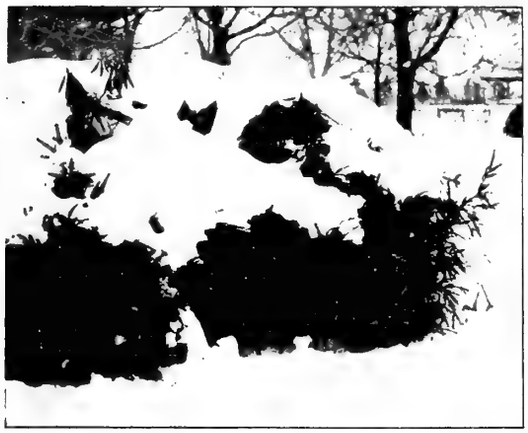
Cut boughs from evergreens form an ideal shield from snow damage and should be used too, on all recently moved plants, especially in open places

Bay trees and English ivy will winter perfectly under the protection of a porch

Specimen box suffers from winter drying. White pine branches and a manure mulch at the bottom will protect. Insufficient bottom protection is shown on the right

For Winter

STIVE. THE VITAL THING IS TO CHECK THAN TO CODDLE THE PLANT WITH KILLS, ESPECIALLY WHEN DEALING NTS, WHICH WILL GENERALLY ENDURE ON FROZEN TISSUE DOES GREAT HARM



loosely on top and stuck around the bed are amply show no "burning" in spring

All snug and ready for winter. This is the proper way to protect evergreens moved in winter

Scatter leaves lightly over the small plants after winter sets in, and lay over them evergreen boughs to prevent their being blown away

The straw jacket can be used on standard roses or other plants with bare trunks and which cannot be bent over, laid down and buried. Be careful that field mice cannot find a harbor

The lower branches of evergreens with the adjoining hedge, and leaves on the ground, make an ideal place for most tender things

The old corn stalks will be quite handy to protect evergreens, etc., from severe cold and sun. Box trees are the specimen plants here, and do not "burn"

Tying up a doubtfully hardy deciduous shrub in Rochester, N. Y.

How a Garden Grew From a Path — By H. S. Adams, New York

ON A large country place the field devoted to economic crops overstepped, at one point, the line that defined the beginning of the beautifully laid out grounds. This jog of land was for the growing of onions. Now there is real beauty in a good stand of onions, either in bloom or gone to seed; but the breezes that blew over the little field brought to the house the characteristic onion odor. So onions went, and potatoes came. Again a certain undeniable beauty in the flowering season.

Across this jog of land the workmen got in the habit of going as a short cut. In so doing they wore a path but, building better than they knew, the path meandered.

From that path developed the personal garden — many other flowers are grown on the place — of Miss Julia Robbins, in Wethersfield, Conn. A path not straight, a jog of land of generous size, not only partially screened from the main grounds but within view of the dining-room windows, seemed to her an inspiration.

Thus, a dozen years ago, began a garden that is personal, that is beautiful and that is sufficiently secluded to be called a thing apart. It is personal to the extent of all the planning and ordering and some of the actual planting; the size of the plot necessitating the relegation of the heavier work to the family gardener. These three things make up the charm of Miss Robbins's garden — which, very properly, is designed as a home retreat. The passer-by can barely glimpse it through the interstices of a thin and irregular line of trees and shrubs that forms the background of a broad expanse of lawn.

Like all worth-while gardens, this one grew gradually. At first the plot, mostly on the west side of the path, seemed a good place in which to "put things" — flowers that the planner of the garden liked herself. German iris bounded the original garden and a special feature was a large bed of heliotrope. The iris, in variety and well placed, remains a dominant attraction in its season.

This herbaceous border is separated from the garden by the shrubbery at the extreme left. Grape vines at the back and anthemis, shasta daisy, nasturtium, verbena, China pink, "angel's breath," canna, golden glow, zinnia and French marigold in bloom

As a windbreak, privet was used to denote the north and west boundaries. But it died down and in its stead a hemlock hedge was set out eight or nine years ago and this to-day is a beautiful garden boundary on two sides. Looking southward, toward the house, there is a scattering of hemlock, spruce, birch, hickory, apple and pear trees — but open enough to afford a view of the garden and, in the distance, the tall spire of the ancient village church. The eastern screen is the thin line of planting already mentioned;

Since then the garden has had its present form. A grass plot, studded irregularly with beds and borders, takes up the main part of it. This plot follows the serpentine path on the east, and on the north and west is bounded by a straight walk between which and the hemlock hedge is a wide herbaceous border. The hedge, however, stops about half down on the western side, and at its end the walk curves inward so as to get away from set lines and at the same time form an immense rose border.

The herbaceous planting is largely for spring and autumn color. There is considerable variety, with always white cosmos to stand out against the dark green of the hedge. In a portion of the beds various annuals and bedding plants — every year showing a change — are employed for special summer effect, each kind, as a rule, being given a place to itself. Others have, besides iris, some of the perennial grasses and yucca.

From the entrance corner of this garden, but quite concealed from it by a screen of shrubbery, runs a herbaceous border east and west for perhaps three hundred feet. This takes up the space between an old plank walk, leading through to the other side of the block, and a line of grape trellises. It started off with painful magenta tendencies; now it is a very successful border of perennials, with a generous filling in of annuals.

This walk is interesting as a solution of the problem of a "cut-off" when the home tract stretches clear through a very wide block in the country, with a family house on either street. It not only makes a long walk seem short but, with the help of grape vines, screens very pleasantly land that is for use rather than ornament. Furthermore, it affords an extension of the hardy garden.

Here the heavy plank walk has a flower border on only one side because the adjacent grass — in one section of which daffodils are naturalized — is allowed to grow to hay length. There is an endless variety of bloom, special accenting notes being the Japanese iris, Shasta daisy, larkspur, golden glow, canna, Canterbury bell, "angel's breath," and snapdragon, as well as the dahlia, nasturtium, marigold and zinnia.

Looking east along the hemlock hedge and herbaceous border. White cosmos against hemlock; canna, dahlia, cockscomb, zinnia, agertum as fillers

Birch, hemlock, hickory, spruce, beech, apple and pear trees form a thin screen toward the street and the house

UNDER GLASS

A $50 Greenhouse

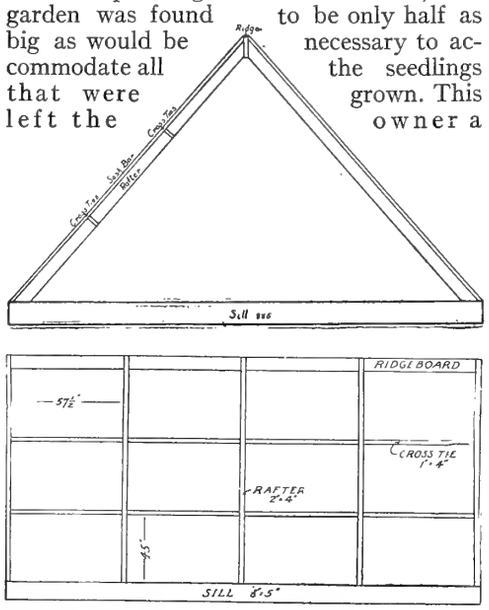
A. E. Wilkinson, New York

PERHAPS as good a way as any to begin to answer the desire for garden work during the winter is to build a little greenhouse. There is one right near me, quite a small affair, 16 feet wide and 20 feet long — merely a frame on the ground to support sash bars of the regulation size. An amateur like my neighbor can get a great amount of satisfaction from such a little structure. There is the forcing of plants for setting out early, and indeed, with this adjunct to a garden, it soon becomes a matter of wonder however you could have got along without it.

Hotbeds and coldframes you have come to look upon as absolute essentials in an up-to-date garden; and this kind of greenhouse is, after all, not much more than a magnified hotbed. It lays no claim to architectural beauty; it does claim serviceability. This little house was built for considerably less than fifty dollars, counting material only, and as cost was a decided element to be considered, everything that went into the construction of the house had already seen service in some other form of construction. In other words, the material was second hand. My friend and neighbor who owned the greenhouse did every bit of the work himself. He had no skilled workmen on the job at any time. The result — it has surpassed the builder's dreams.

There is a central walk and the spaces on each side are used to accommodate garden flats packed as tightly as possible. Last year 160 flats 12x18 in. were in use. In these were sown seeds of everything desired in flower or kitchen garden. The seeds were sown in the flats in drills or rows, and when large enough for handling the young plants were transplanted into other flats so as to give space for the individual to develop. Of course, at all times attention must be given to watering, ventilating and heating. The smaller the house the closer one has to attend to these details. In this case, three times a day, morning, noon and evening, conditions have to be seen to. But the result!

When planting out time arrived, the garden was found to be only half as big as would be necessary to accommodate all the seedlings that were grown. This left the owner a very good percentage to dispose of elsewhere. Counting those sold and those actually used (and given away to friends) at market prices, and figures totalled to more than half the total cost of the house. Surely it was worth while.



Above: section of the little greenhouse above: Below: plan of one side of the roof

THE first step was digging a trench in the soil to correspond with the dimensions of the wall of the base of the house. This was about 18 inches deep, about a foot wide and 20 feet, 6 inches long on the south side. Turning to right angles at the west end of this trench, another trench was dug, 16 feet 6 inches north. The other two sides of course paralleled these. After the digging the trenches were filled with small stones, collected from the garden. This made the foundation of the greenhouse.

A form of 8-inch boards was made to mold a concrete wall. This form was built to correspond with the exact measurements of the base of the house, that is to say, 16x20 ft., outside measurements. The form was six inches wide, inside measure. The form being centred on the foundation was filled with concrete (the formula being one part of cement, three parts of sand, four parts of gravel, with enough water to make a sloppy mixture). These ingredients were thoroughly mixed. When placed within the form, the concrete was packed evenly throughout by means of a piece of 2x4 scantling. The form was removed after about a week, leaving a good wall.

Upon this wall a 5 x 8 in. sill was laid, the ends being properly lapped and securely

This little homemade greenhouse is heated by an inside slow combustion coal stove. Regulation sash bars are utilized for the roof

nailed. Upon each side, five rafters were fastened, one at each end and three between, all meeting at the ridge. The height from the ground to the ridge-board is nine feet. This height gives ample pitch to the roof, catching and retaining the greatest amount of sun's rays and heat. These rafters formed the resting places for the sash bars and glass.

Connecting each of these rafters are two parallel rows of 1x4 in. stock, extending across the roof of the house from east to west. The first row was about $3\frac{3}{4}$ feet from the sill and parallel to it. The next row was $7\frac{1}{2}$ feet from the sill, and of course parallel to the sill and the first row. These cross pieces on both the north and south sides of the roof give increased strength and stability to the roof. Over these cross ties and rafters from sill to ridge, the sash bars are placed and securely fastened with nails, each bar being far enough apart to accommodate a pane of glass 12 inches in width. This necessitates 38 sash bars, each bar being 12 feet long. At the ends or sides of the house, the sash bars are inserted perpendicularly to the sill and extending to the end rafters. The same distance between sash bars is maintained here. All glass used is double thick, 12x12 in. Instead of being lapped where the panes met, they were butted. This arrangement has been found to be quite satisfactory in this case, as no special winter heat is maintained in the house.

Near the ridge on the north slope, toward both ends of the house, ventilators are placed, one toward the east and one towards the west, each ventilator being 12 inches wide and 20 inches deep. As a further aid to proper ventilation, a 30 x 30 inch, six-pane window was constructed in the west end of the house, while opposite this window, in the east end, is a wooden door 30 inches wide and 6 feet 6 inches high.

The heat other than that furnished by the sun's rays and trapped by the glass is supplied by a small coal stove, located half way between the ends and sides of the house, the chimney protruding through the north slope of the roof, taking with its surrounding sheet iron the place of one light of glass.

An ornamental ridgeboard was installed upon the ridge to give a finished effect to the whole house. Two coats of white paint thoroughly applied to the woodwork completed the work.

Good May-Flowering Cottage and Darwin Tulips

By Ernest T. Cook, Ontario

[EDITORS' NOTE: *Before becoming established in his present location the writer of this article was for years Editor of "The Garden" (England), and is also well-known as the author af several books on practical horticulture. This is his first contribution to the contemporary American horticultural press. Mr. Cook is to contribute a series of articles to* THE GARDEN MAGAZINE.]

These late flowering tulips can hardly be over praised — they serve equally for the garden and for cutting, and come in colors that will fit into "schemes." They are not crude and dazzling like the early kinds. Cottage and Darwin tulips though somewhat allied, are garden flowers in the best sense — tall, stately, strong in every way, and showing a beautiful diversity of coloring from almost black, through an intensity of purple, and possessing in one instance — Ellen Willmott — the fragrance of the Marechal Nièl rose.

The tulip may be, quite correctly, regarded as a bedding and border plant, but some of the most beautiful flower pictures last spring were groups of the soft salmon-rose La Mervielle and the vermilion Gesneriana spathulata in the shade of a lawn. Fresh greenery all around; and then this wonderful flower splendor subdued and yet enriched by its sympathetic setting.

There is much wisdom in the right contrast of color and it was most noticeable that La Merveille, side by side with strong crimsons, utterly lost its clear luminous brightness. Many hundreds of people saw this collection and the kinds named were the most admired. To ladies in particular the soft shades of heliotrope in Dream, Gudin, Dolores, Rev. H. Ewbank, Erguste, and Edouard André made the warmest appeal; the kinds named are charming and an agreeable contrast with pale yellow and deep orange.

The most important cultural detail is a soil free from stagnant moisture; ordinary loam will suffice. Raise the beds two or three inches above the level, planting the bulbs about six inches deep where the soil is heavy and seven inches if it is light, with a distance between each of six inches, not a fraction less. After planting give a top dressing of well-decayed manure, which is also a suitable protection in winter. When the bulbs are just beginning to spear through in spring, carefully remove the top-dressing and loosen the soil for the sun and air to sweeten it. Take up the bulbs every year when the leaves have quite died down and store them in boxes or bags in a cool cellar or similar place. A tulip begins to deteriorate at once, if left in the soil; it must be lifted each year, and if it can be given a fresh position so much the better.

These tulips are also well suited to pot culture, and nothing in gardening is simpler — the rules to follow being the same as in the ordinary spring bulb routine. And when planted in bowls for the house, the best results come from peat moss fibre, shell and charcoal.

Not a single flower of weak coloring or in any way undesirable has been included in the following selections. The Darwins are placed first, the stem height being indicated in each case:

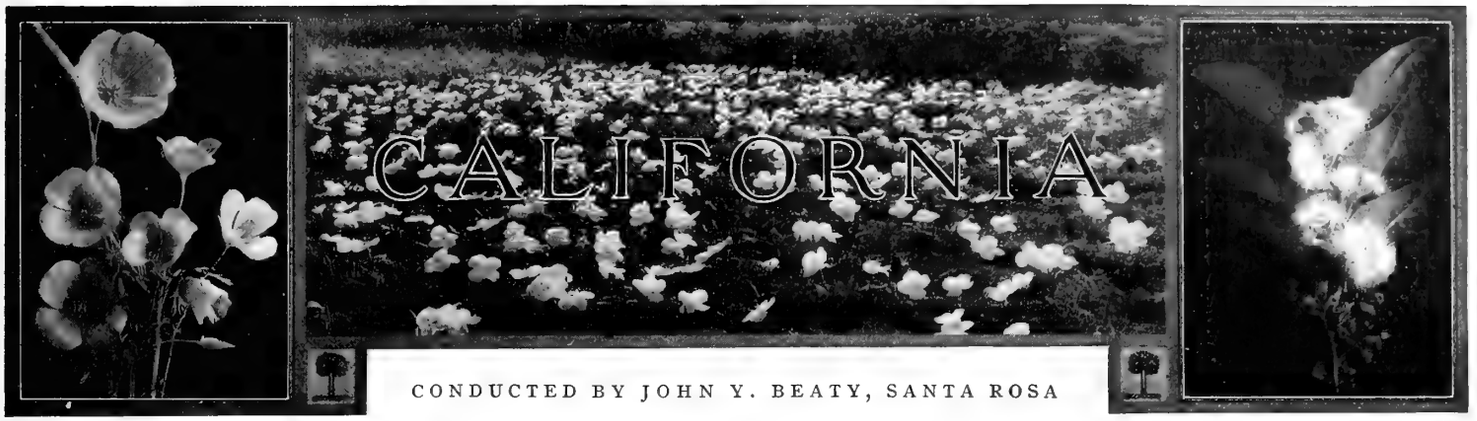
Baronne de la Tonnaye, rose melting into blush, a lovely cup, 26 inches. *Black Knight*, intense satiny maroon, 22 in. *Carminea*, glowing carmine, made more glowing still by an electric blue base and dark anthers, one of the most perfect of the race, 19 in. *Donders*, deep crimson, down in the heart of the flowers there is a violet suffusion, 25 inches. *Flambeau*, brilliant carmine rose, rich purple base, a glorious tulip, 20 inches. *Glow*, one of the first to choose, vermilion, 23 inches. *Loveliness*, rose and blush, 21 inches. *Mr. Farncombe Sanders*, rosy scarlet and white, 27 inches. *Prof. M. Foster*, a rich medley of rose and scarlet, a noble flower, 30 inches. *The Sultan*, not inaptly called "The Black Tulip," the big globular cup appearing on a stem 28 inches high. *Velvet King*, in which a royal purple is intensified by a white base, 24 inches.

The cottage tulips are much like the Darwins and probably have the same parentage, which may be traced to the splendid Gesneriana. They possess one marked characteristic, a winning gracefulness, in contrast to the greater formality of the true Darwins. This trait adapts them for naturalizing in grass and for cutting and the coloring is delightfully fresh and pure, singularly so amongst the shades of rose and crimson. The following selection is the result of my own observation.

Black Chief, rich maroon, 24 inches. *Bouton d'Or* or Golden Beauty, perhaps the richest of all in its particular coloring. *Dom Pedro*, bronze and dull yellow, a large firm textured cup and a tulip that created remarkable interest, 24 inches. *Fulgens*, readily recognized by long reflexing crimson flowers, a most distinct kind, 24 inches.

The *Gesneriana* trio are most excellent: *Spathulata* also called major, superb in every way, the tulip for planting or massing in beds, the scarlet coloring made richer by a base of blue black, it should be the first chosen for the garden whether formal or otherwise, 24 inches; *Aurantiaca*, also called Globe of Fire, brilliant scarlet flushed with orange, 24 inches; and the deep yellow *Lutea*.

Another trio exits in the *Inglescombes — Scarlet, Yellow* and *Pink*, the names suggesting the color; they are about 20 inches high. *La Merveille* and the sweetly scented *Macrospeila* have been already referred to. *Mauriana*, a tulip from the gardens of Savoy, glowing scarlet, a remarkable color, lit up with a base of gold, 21 inches. *Mrs. Moon* may be truly described as magnificent, the deep golden yellow flowers having pointed petals, 28 inches. *Orange Beauty*, a mixture of dazzling orange and red, with which the sweet scent does not seem to harmonize, yet a noble kind, 20 inches. *Picotée*, a general favorite, pure white edged with rose, the white giving place wholly to rose, as the flower ages 20 inches. *Primrose Beauty*, a dainty little tulip, primrose yellow and with the scent of the same flower, only 16 inches. *Queen Mary*, canary yellow, a fine kind, 24 inches. THE *Fawn*, rose, blush, white and fawn, a charming mixture, 21 inches.



CONDUCTED BY JOHN Y. BEATY, SANTA ROSA

November Garden Suggestions

IT IS time to look after the dahlia tubers. Cut back the stems to a foot from the ground. Remove the tubers without injuring them and see that each cluster is properly labeled. Clean all the soil from the tubers and then store them in a dry place for two or three weeks. After that they will be well cured and may be stored for the winter.

So often are the bulbous plants neglected and they become matted that the blooms are greatly reduced in size and beauty. If you have been thus negligent, resolve now to not let it happen again. Examine this month all beds of montbretias and iris. If the plants and bulbs are crowded, remove all, spade the soil two or three times, and add a generous amount of manure. Then select the best of the bulbs to replant. If there has been any sign of pests in the old location, you better plan for the bulbs in another location. Most bulbs do better when not grown on the same soil year after year.

Other perennials that need attention now are: Cardinal flower (*Lobelia cardinalis*), phlox, doronicum, delphinium, tritoma, and primrose (Primula). Prune off all the old flower stems and divide the crowns. Arrange for some of these in a new location for next year. Select a good rich loam and pulverize it thoroughly, working in a coarse manure if the soil is heavy. If you have more crowns than are needed, by all means use only the largest and best. You can probably find a market for the others among neighbors.

Perhaps I am a crank on bulbs, but there certainly is no excuse for having a yard half full of weeds when bulbs might be grown instead. No matter how carefully you have planned your place, you will surely find some corners where a few bulbs will fit in nicely. It is not yet too late to plant tulips, hyacinths, and daffodils. You don't have to study color harmony so much in putting in these little clumps, because they will be blooming before other flowers about them have opened.

Canterbury bells grow to perfection in California. If you have experienced the pleasure of coming unexpectedly upon a clump of them as you turned a corner in a friend's garden, you will surely want some for your own. On good soil, they grow quite tall, so they must not be planted in front of something else. They do very well in clumps by themselves. I saw an especially attractive bed beside a rustic pergola in Berkeley last summer. The pergola was a small one, just large enough to shelter a small stone seat; and the person who could resist the invitation of the Canterbury bells to come there and rest, must surely be without a sense of the beautiful.

Good growthy plants can be secured now from the seed houses for about $1.25 per dozen. One dozen isn't enough, however, for they are at their best when massed. They may be had in white, blue, and rose pink. Perhaps the best way is to plant each color in a cluster by itself. If you want a combination, however, the white and pink will harmonize, or the white and blue. Do not set the plants too deep and not more than eighteen inches apart.

Keep a close watch on the lawn and drives. Don't let the rough edgings get a start. Keep everything well trimmed, and the weeds all removed. A frequent rolling at this season of the year will accomplish wonders. If your lawn has suffered from gophers (there are few lawns in California that have not), fill in the holes with good rich soil, and pack it well, giving special attention both before and after rolling.

You must always be on the watch for the depredations of pests. This month is a good time to examine the lily bulbs. Cut worms and wire worms often do great damage to lily bulbs, especally those that have been in one place for some time. If you find either of these in the lily bulbs, take up all the bulbs at once and soak them in water strongly impregnated with soot. Either move the bulbs to a new location or destroy the pests in the soil before putting back the bulbs. In order to destroy all insect pests in the soil, use carbon bisulphide. This is a volatile liquid that produces a heavy gas that goes all through the soil and kills all life.

It may be applied by making a small trench every two or three feet and pouring the liquid in and covering it at once with soil. Nothing should be planted in this soil for two or three weeks for there is danger of its being affected by the poisonous gas. Just before planting, thoroughly aërate the soil by spading deep and pulverizing.

This carbon bisulphide is also an excellent poison for moles or gophers. Saturate a ball of cotton with the liquid and drop it down into the rodent's hole. Then cover the hole. The gas will go down into the hole and kill all the animals in it. The liquid must be handled with caution. It is highly inflammable and so should not be brought near any fire. In applying it, be careful to not breath the fumes.

You probably won't care to plant any vegetables this month, but you must see that everything that is growing in the vegetable garden has a fair chance. This is the time of year when weeds will get ahead of you if you don't keep after them. The removal of weeds is not the only thing, either; the stirring of the soil about the growing plants does a lot of good. Sometimes I think that weeds are provided so that we will be forced to stir the soil about the plants.

If you have clematis of certain varieties, now is the time to attend to the pruning. Varieties of the viticella, Jackmanii, lanuginosa, and paniculata groups blossom from the new shoots, so there is little danger of affecting the bloom by too severe pruning. Varieties of the montana, cærulea, and florida types make flowers on the old wood, and must not be cut back.

Work in the Greenhouse

FERNS, primulas, calceolarias, caladiums, and cinerarias will need attention.

Begin to treat the ferns so that their fronds will become hardened to withstand the changes in weather conditions that will come during the next few weeks. Move them from the close, moist atmosphere into a location where they will receive more light and air.

Flowers will be showing on the earlier primulas. The pots should be full of roots, and a little weak liquid manure about once a week will do them good. Later plants should be examined for root growth. If the roots are well developed, they should be transferred from a three

inch pot to a five inch pot. With more room, they will be likely to continue in bloom the rest of the winter. If you have only the old time *Primula Sinensis*, you are not getting the full benefit from primulas. You really should have the newer form, var. *stellata*; and *Primula obconica*.

This is the month in which the tubers of caladium must be ripened. They cannot be left to themselves. Place the plants where they will receive full light and water them carefully as the foliage begins to die. Reduce the water each day until when the plants have died back they will not be receiving any water. Then allow the soil to become perfectly dry. Lay the pots in some out of the way place where the temperature does not go below 50 and leave them till they are wanted in spring.

Order Roses Now

THE last of this month or the first of next is the time to begin planting roses. They may be planted as late as March 15, but results are better when planted early. It always takes a little time to get your order filled, so it is time now to send it to the dealer.

Select by experience field grown stock and choose the kinds that are budded for they are more vigorous growers and longer lived. Some have objected to them because they have a tendency to sucker. This may be avoided by setting the bush so that the place where the bud was attached is under ground.

When you plant the roses, don't neglect the preparation of the soil. It would be a good plan to spade up the soil now, and then spade it again when you are ready to plant. Make the hole plenty large enough to allow plenty of soft soil in which the roots may get a start. Prune back both the roots and the branches before planting. Leave two main shoots on opposite sides of the stock and prune all the roots back one half. Also remove all injured roots.

Bush roses may be placed two to two and one half feet apart; the standard or tree roses may be placed four to six feet apart.

California roses may be divided into twelve groups which are briefly described here. Each group has a special use.

Banksias are vigorous climbers. They have small flowers which are borne in clusters. They bloom profusely and require little care.

Bengals or Chinas are valuable for borders, producing an abundance of brilliant crimson blossoms.

Bourbons are at their best in autumn. The foliage is luxuriant and the varieties are good for planting in prominent places.

Hybrid Noisettes are so-called everbloomers. They are especially good for small places where there is not room for a large collection.

Tea roses are deservedly popular. They have exquisite aromas, are free flowering, and have the most delicate tints and forms. They require more care than most of the others.

Hybrid Perpetuals bloom in spring and fall. They are very hardy and so especially suited to the northern counties of the state. The well known *moss* roses which belong here are especially fine for cutting.

Noisettes or *Champneys* are vigorous climbers.

Hybrid Teas are vigorous growers and almost constant bloomers, especially desirable for the small place.

Japans or *Rugosas* are mostly singles. The foliage is attractive which makes them desirable for lawn planting.

Polyanthas grow low and compact and bloom most of the season.

Prairies are especially useful for covering walls or unsightly fences or outbuildings. They are very hardy and so can be used in the northern counties. They grow more rapidly than any of the other varieties.

Here is a list of some of the best varieties arranged according to their use. In planning, the first thing to decide is the use that each variety will serve. If it is an old building or unattractive fence that is to be covered, you will need a climber. If a border is desired, select a bush variety. If you want some especially for cutting, some of the moss roses should be included. The color, of course, should also be considered.

ROSES FOR CALIFORNIA ACCORDING TO CLASS

BANKSIA: Banksia, single white; Banksia, double white; Banksia, yellow.

MULTIFLORA: Climbing Madamoiselle, pink; Crimson Rambler; White Rambler; Cecile Brunner, salmon pink; Yellow Rambler.

NOISETTE OR CHAMPNEY: Celine Forestier, sulphur yellow; Gold of Ophir, coppery red; Madame Alfred Carriere, white; Wm. Allen Richardson, orange yellow; Cloth of Gold, yellow; Lamarque, white; Marechal Niel, sulphur yellow.

PRAIRIE: Grevillea or Seven Sisters, white; Prairie Queen, rosy red.

TEA AND HYBRID TEA: Climbing Kaiserin Augusta Victoria, white; Climbing La France, silvery pink; Rêve d'Or, deep fawn; Reine Marie Henriette, cherry red; Climbing Meteor, red; Gloire de Dijon, buff.

BOURBON: Climbing Hermosa, delicate rose.

BORDERS AND BEDDING, BENGAL: Agrippina, rich crimson.

MISCELLANEOUS

Alice Roosevelt, deep pink; Baby Rambler, crimson; Bride, white; Captain Christy, flesh color; Duchess de Brabant, flesh color; General Jacqueminot, dark crimson; Helen Gould, red; Kaiserin Augusta Victoria, white; Madam Lombard, red; Meteor, dark crimson; Papa Gontier, red; Safrano, yellow;Ulrich Brunner, scarlet; American Beauty, pink to rose; Black Prince, dark crimson; Bridesmaid, deep pink; Catherine Mermet, pink; Francisca Kruger, yellow; Gruss an Teplitz, deep red; Jubilee, red; La France, pink; Magna Charta, pink; Caroline Testout, pink; Paul Neyron, pink; Sunset, yellow.

VERY DWARF VARIETIES FOR EDGING, POLYANTHA

Baby Rambler, crimson; Annie Marie de Montravel, white; Mignonette, pink; Schneikopf, white; Clothilde Soupert, pink.

FOR CUTTING, MOSS

Alice Leroy, glossy pink; White Bath, white; James Veitch, dark crimson.

WINTER AND EARLY SPRING BLOOMERS

TEA: Elize Suavage, pale yellow; Safrano, yellow; Papa Gontier, carmine. HYBRID TEA: Augustine Guinnoiseau, white.

HOT WEATHER BLOOMERS (*July-August*)

HYBRID TEAS: Caroline Testout, pink; La France, rose; Viscountess Folkestone, flesh color; Meteor, deep crimson.

ROSES OF MONSTER SIZE

HYBRID PERPETUAL: Paul Neyron, deep rose; Merville de Lyon, white. HYBRID TEA: Duchess of Albany, dark pink; Reine Marie Henriette, cherry red; La France, rose.

A rose covered cottage, not an unusual sight in California. Near Stockton

The Garden Doctor

Continued from page 106, October number

CHAPTER XX

CLARKY says a first garden is like a first baby. The parents get terribly excited over the least indisposition and think it's in imminent peril at the slightest woe, but when it's the second, or third, or fourth infant, they take a wail of distress more calmly. They know the variety of the wail, and precisely what to do!

So now, when I sat on the bench below the lilac bush, I began to consider the garden critically and to think largely of color and form and other things far nobler and pleasanter to contemplate than rose bugs or swarming aphides.

I sat and gazed down the bean walk now garlanded in real pergola fashion and thought it needed a better finish than the poles against the distant mountains: something tall and straight and green, like Italian cypresses, one at each side just inside the line of posts.

I confided this idea to Clarky.

"Shucks!" she said (Clarky has picked up some expressions from Mrs. Tarbox). "Shucks," said she, "this isn't Italy. Isn't it enough to have your garden grow and the plants healthy and — normal?"

Then I tried Stephen. He was more hopeful.

"Something tall and straight and green," he said musingly. "There are young junipers in the pasture that would be that. We could get them where they would be spared easy. And for the corners of the beds, young pines would be all right for a few years. It's too cold here for box. Want to come?"

"Where?"

"Up the hill to find them."

"Of course."

Next morning he brought the horses.

It so happened, that, although I had been four months at the little house, never yet had I gone up the hill. I suppose the reason was that my heart was still a bit queer; nothing serious, only it liked to sit down, which made hill climbing a nuisance. So my walks had chiefly been along the level, grassed road and across the brook to the wonderful pasture; and Stephen McLeod, for all his promise, had never yet taken me up his hill.

He came that morning with the same wagon he had that first May day. Only he had blankets in it and a seat back rigged of rope laced across the rough stakes to make me comfortable: and he had burlap for the comfort of the plants and a spade to dig them with. Slowly we went up the long, open slope, crashing through the tall golden-rod; then we passed through the red gate and entered the pine road. Here Stephen got out and walked.

Up and up went the road, straight up through the pines — tall, straight, branchless trunks, the dark tops touching and forming a canopy high overhead, like the pines in a Southern forest; and high overhead the tops swayed and murmured to each other although the slender seeding dandelion the wagon grazed, never stirred.

Underfoot the red-brown pine needles, undisturbed these fifty years, lay thick and soft like a deep piled carpet; through it little hard ferns thrust their sharp fronds; here and there a late Canada violet bloomed alone, or a solitary dandelion grown oddly tall and slender; a bit of herb Robert fringed the edge by the heavy rail fence with a wood aster swaying above it as lightly as a columbine. Right under the horses' feet grew the stiff little heal-all, more slender than in the open and almost a gentian blue.

The horses stopped to rest, for the road was very steep.

"Your New Englanders would think it morally wrong, I suppose," I said, "to leave the old property line where the road has always been and take the hill at a zigzag to get a better grade for the horses. It might be an evasion of hardship! Yet one would get to the top all the same and about as quickly."

"You don't understand the New Englanders," said Stephen. "They are rather like their hills — bleak and uncompromising and forbidding most of the time. But there are wonderful moments. There's a sudden beauty and poetry, an exquisite moment — and then it goes. But you remember it. The people are like that. There is a rareness and a fineness. Once in a long while you see it; but having seen it you never forget it and always you know it is there."

"Look back," he said.

I turned. One could have fancied oneself looking through a forest of masts to the blue sea, for through the straight, close-assembled trunks showed the blue of the distant mountains and nothing in between.

"It's curious," he said, "that people are content to shut themselves in houses and tie up their lives with things and never go to the woods except to murder them or the wild life in them, or else with a crowd on a picnic." He laughed whimsically. "The trees know better than to say anything then; they talk to you if you go to them alone."

"What is it you do up here, Stephen McLeod?" I said "It's never stock-raising you do on these hills. Is it poetry? Or mustn't I ask?"

He looked at me — the quick, startled look — then scrutinized me a moment, intently, penetratingly; hesitated a bit, then —

"I'll show you," he said. "I've half intended to show you for a long time. We're near there now."

He turned from the pine road into an open, trackless pasture. I saw no vestige of a road, but presently we entered woods again and were on a road, straight and level, but so overgrown that the crowding hemlocks brushed the wagon wheels and bent over and touched our faces; and far ahead the opening showed the blue tip of the mountain. Stephen stopped the horses, helped me down, pushed aside the branches and I saw a crazy little shack, the key of which he carried in his canvas pocket.

It was a small, bare room that I entered. There was a tiny chunk stove; at one side a rough bench under a wide narrow window high up on one side; in one corner was an old easel; standing crowded against the wall was canvas after canvas. He picked one up, looked at it a second, flushed a bit, then he set it on the easel and moved it so that the light was right; then he took it away and put on another and another. He had painted the mountain again and again, each time with a varying aspect. Now, as he told me of it, first with the slender columbine against the sea of mist that almost hid it; then in the deep blue of October and the wonderful mauves and purples of the October twilight. The work had a vigor and freshness and subtlety, too.

"If you take a beautiful thing and isolate it, sometimes you can make people see it," he said, "see that it is beautiful, just as one takes a stone and puts it in a setting. To me that is the whole point of art — if one sees that the thing is beautiful one must make it evident to people who would not see otherwise."

"Look at my view," he said, breaking off. He made me stand on the bench and look out of his wide high window. Below was sheer cliff — his fortress was a Gibraltar from that side. Far, very far below I could see my little house with the wide green slope — much greener than the surrounding pasture — and the line of trees at its back, the elm beside it — all looking like a German toy, the trees like unreal trees.

"Do you see your place?" asked Stephen.

I nodded.

"What is it you are going to do to it," he said, jealously. "It's a dear little place; this is the only spot from which you can see it. You're not going to make an Italian garden, surely."

"I'm not planning anything very dreadful," I said. "I only want to bring down some columbines. I'd rather have the wild ones than the others. And then I don't like the looks of the bean poles against the divine blue that the mountain is now; I want two junipers for just inside. I'm going to mark the corners of the flower beds with chubby little pines, so that I won't lose them — I mean lose track of just where they are during the winter. There's nothing very iconoclastic in that, is there?"

Stephen laughed. "No," he said, "I like a garden. But where the country's so beautiful we have less need; don't tie yourself up with your garden. The woods are never so lovely as they are in May. Don't make a garden that isn't able to take care of itself a bit. That's the kind I have."

"What do you mean?"

"Oh, bulbs. They can shift for themselves beautifully, and like to. I put mine a foot deep so that annuals on top won't trouble them. They don't mind the extra climb. Just have things that are strong and sturdy, and if you want roses, have the wild kinds. Save the early spring for the scarlet maples and make all your garden now."

"Reckon I must get those plants now," I said.

Stephen locked the little place and we walked a bit down the road for he said there were columbines just below.

"But can you spare them?" I asked.

He laughed. "There are oceans of them here," he said.

He dug them carefully and showed me how to wrap the roots; then we went down the hill after the junipers. Fat little pines we got, too, and violet plants for Clarky's garden. Stephen told me how I could make a house plant of a hemlock by keeping it very wet for a few days and then in the shade.

The road came out by another old orchard and Stephen showed me the line of where the house had stood and the terrace; for otherwise there was no sign except for the tansy growing riotously in a square patch. It had usurped all the old herb bed.

"Some one here has liked the junipers for decoration," said he, and he showed me four huge clumps of the spreading juniper set at regular intervals below the terrace line.

"Where have the people gone, and who were they?" I asked.

"Don't know," he answered. "Our country is full of places like this. Sometimes there's a wreck of a house left, your place would have been that in another dozen years. It's only the hills and the little bluets that are really permanent."

CHAPTER XXI

I HAD a beautiful time over my garden making. Gardening in late September was a very different thing from the planting I had done in May, in frantic haste, when Mother Nature herself seemed in a very frenzy of industry, like a New England housewife bent on spring cleaning. Even the days were longer then, as if the sun had been especially requested to give a little more time for work.

Now, everything went in leisurely fashion. The days were quiet and golden; as quiet as at the creation when the "evening and the morning" made the day, each suddenly overtaken by darkness that dropped like a quick curtain. The thrushes were silent; the fox sparrows and the humming birds flitted about quietly, with nothing of the desperate haste that had been theirs earlier; the bluebirds in the apple tree were thinking of their winter flight and resting for their great adventure. What tiny things to have such high hearted courage! What brave explorers and what passionate homemakers! How they must despise us as incompetents who are so craven about getting away from our accustomed haunts and away from the base of supplies!

My woodpecker has no intention of leaving; he taps, taps, as assiduously as ever — to have the tree ready for the next tenants, I suppose. Sometimes he taps at my window in the mornings; he just happens by and does it from force of habit!

I worked peacefully and slowly in my garden, planting carefully and watering properly and I followed my handsome plan. I had a broad, central path, long beds each side, the plants in rows for convenient weeding. Farthest back, I set the hollyhocks — the young plants from my frames — for they could look over the heads of the others without difficulty. In front of them came Canterbury bells, and I made an edge of little English daisies. And wherever there was space (and wherever there wasn't) I sowed Shirley poppies, to my mind the most exquisite of all the flowers that ever grew. Why is it that even the poets have blackened its character? "The poppy's red effrontery," I believe *that* was Robert Browning; and some one else speaks of its color as "flaunting." Flaunting! When no flower has more of the spirit and less of the earth. How can they misunderstand its marvelous delicacy and lightness of poise; so sure, and so wonderfully slender of stem that it seems like color incarnate rather than a product of growth of leaf and stalk and stem! Then its bursting from the sheath like an imprisoned sprite and letting its crumpled petals smooth in the sun as a new-born butterfly dries its wings. No flower is so instinct with life. And all this life and color and beauty content to spring from the poorest soil and the hardest conditions. It's a poet and artist by nature. And the roses, belauded and petted for centuries as types of maiden innocence and loveliness, must have heavy feeding and constant attention or they will do nothing at all! It's an odd world and an ungrateful one.

So I scratched the soil where the grass grew thin, and planted poppies there that they might grow up in the grass. I set the tall, straight junipers where they "looked right" at the end of the path with the mountain behind them, and the fat little pines marked the corners of my beds quite as well as if they had been box plants. I brought Virginia creeper from the woods and set it against the house, and I planted the columbines and violets we had brought from the hill among the maiden-hair ferns in the bed with the retaining wall that Clarky had made.

I worked slowly and happily, and in no frantic fashion. I suppose the quiet and patience of the hills sinks into one and gets under the skin. Then, when I stopped work, there was the mountain to look at that was quietness itself serenely magnificent in its royal purple. Indeed, all gold and purple the landscape seemed. Goldenrod held the sunshine in the pasture; marigolds were blooming happily in the garden; and up the hill, out from among the dark pines, flashed here and there the early crimson of a scarlet maple.

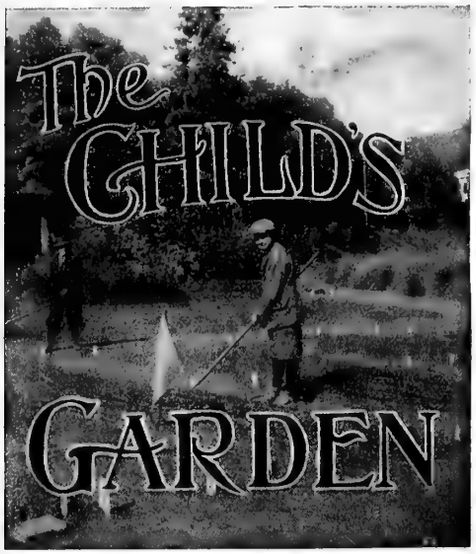
Then I watched the cattle, which, if there is anything in "suggestion," are enough to make the most febrile person take life quietly. Those cows could stand and gaze at me for twenty minutes straight — until I felt oddly embarrassed; gaze with a godlike impassivity and chew without even having to stop and bite as the horses did. Nothing interrupted the calm stare and the steady motion of the jaws.

Richard Protheroe said he believed the general rural prevalence of the tobacco chewing habit was chiefly due to "suggestion" from the cows. But Richard is rather frivolous for a clergyman.

Clarky says it would be charming to see the cows coming down the hill at evening into our barn.

"It's far better that they come down into some one's else barn, Clarky," I said, "Cows would mean milking; and milking, a hired man; and with a hired man would go our solitude. A cow on the landscape suggests contemplation and repose; in the barn, it suggests chores. It's far better to have the effect of the cattle on the landscape and get our milk from the Thistledown Farm."

(To be concluded)



CONDUCTED BY ELLEN EDDY SHAW

Indoor Planting

AT THE beginning of the school year teachers and pupils often ask this question: "Is it possible to have something blossoming in our class rooms or at home every month in the year?"

Of course it is, if one plans ahead and takes into consideration existing conditions. It is possible always to have something growing in a class room all the year round.

All bulbs should be planted and stored away by the end of October or the first of November. Usually, these are not expected to produce bloom before January or February. What is the next step toward working out the plan of continuous plant growth and bloom?

A very pretty window box for the school room, and one which will withstand changes in temperature, especially drops in temperature, is a box of evergreens. For such a box get young evergreen trees from eight inches to one foot in height. These trees may be white cedars, junipers or young pines. It is very easy to fill this box if one lives in the country. A city dweller may have them shipped in or will have to take a journey to the countryside for them. Take up as much earth as possible with the little trees, gather some large pieces of moss and if possible cut some bark from an old rotted tree. Cover the sides of the plain wooden window box with the bark and so get a rustic effect. Fill the bottom of the box with from one to two inches of drainage material and some pieces of charcoal. Fill in wood soil and place in the little trees. Spread the roots out carefully so that they are not cramped. If a rootlet is bruised at all cut off the injured part, making a good clean cut. Now pack the soil carefully about the roots and fill the box right up to within one inch of the top with soil. If the black woods soil is not sufficient in quanity to fill the entire box, be sure to use it about the roots of the trees. And then fill in with poorer soil, for the roots are the feeding part of the plant, and the best food should be close to them. Water thoroughly after planting and place the moss over the surface of the soil. The moss acts like the forest carpet, holding in moisture and preventing surface evaporation. I have known boxes like this to last for years in a class room. Each summer the box should be set in a shaded spot in the open air to rest. In the South such a box could be used as an out-door window box all the year.

Similar little evergreen trees potted up separately in little rustic boxes make charming Christmas gifts for the small boys and girls to take home to their parents. These little boxes can be made in the shop as a part of the manual training work.

Start Chinese lilies and paper white narcissus in water now for Christmas bloom. This settles the question of what one can have blossoming in December.

There are certain plants which are possible to raise from seed indoors. These may be made to bloom under ordinary class room conditions and, of course, will do far better at home. These are dwarf French marigolds, scabiosa, stock, petunia, candytuft, sweet alyssum, and cornflower.

They may be raised in small pots or flats. It is well to start the seeds in flats and later transplant the strongest of the seedlings into small pots. Thus the children get their lessons of planting and transplanting in the natural order of development.

In starting young plants it is better to have a soil not too rich. If one third the soil be sand the rapidity of growth will be helped. Young geraniums potted in a sandy soil grow faster and bloom more freely.

Fill the flats with this sandy soil and then shake the box. In this way the soil settles sufficiently for planting. Scatter the seeds over the surface of the soil, and sprinkle a light coating of soil over them. Screen the flats from too direct sunlight at first. When you water, do not flood it over the surface of the soil but sprinkle it on by hand.

Dwarf French marigolds are perhaps the most satisfactory of all plants for children to raise from

Boys from elementary school after plants for their school window boxes and class room decorations

Normal students at work in greenhouse, Washington, D. C., raising plants for public school distribution

seed. If the seeds are to be sown in individual pots use 3-inch pots and place six seeds in each pot. Transplant all but three of the seedlings in each pot. French marigolds of the most dwarfed variety, such as Brownie, grow from five to seven inches high. The blossoms range in color from yellow to deep orange, almost to brown. They will bloom in from four to six weeks after planting. They are bothered with no pests and grow with ease. So they are well suited for use with the young children.

Scabiosa takes longer to come to bloom, the time ranging from eight to ten weeks. It likes sun, but is not particular about the soil. The blossom varies in color. The colors are white, pink, crimson and the lavenders.

Stock, the ten weeks variety, as the name implies, takes ten weeks to bloom, although for class room culture it is wise to allow for a longer time. One may have stock in white, crimson and purple. Make the soil sandy. This plant grows from one to two feet high so it must be staked in the pot. The stakes may be made in the manual training shop.

Petunias are not so easy to raise from seed in the class room as some of the other plants. Old petunia plants brought in from gardens do wonderfully well in sunny windows. The plants raised from the seed indoors are slow to bloom, taking at the shortest time ten weeks but more often twelve or fourteen. It is best to buy a named variety of petunia seed. The common seed often produces flowers of startling and crude colors.

Candytuft is a little better, perhaps, for pot culture than sweet alyssum, since it grows bushier and stockier. Buy the lowest growing varieties, the height of which is about six inches. Three plants in a little pot crowded rather closely together give the effect of a little shrub. Candytuft may be had in white or reddish purple, while sweet alyssum always has a white blossom. Either one of these is satisfactory to use in work with young children.

Cornflower appeals strongly because of its beautiful blossom, especially if one chooses the exquisite blue. This flower can be raised in individual pots, but it has the bad habit of spindling in its growth. It also lags along slowly, acting very reluctantly about blooming. Then, too, it is likely to have lice.

In looking over this list one can roughly plan out a scheme for monthly bloom.

Nasturtiums are regarded usually as favorites but are not, after all, so easy to raise indoors. Climbing varieties are easier to cultivate than dwarf ones. They need sunny windows. And they also need a great deal of root space. For this reason the dwarf varieties do not thrive in small pots. As they grow, they should be shifted from pot to pot and staked up as well. One plant should have at least a 6-inch pot for a permanent home if it is to do at all well.

Tuberous rooted begonias are excellent to use in the children's work. Plant them in four or five inch pots. Do not place the pots in direct sunlight, but put them on shaded window sills or tuck them behind other pots in sunny windows. Begonias like shade. They like rich, light soil. Woods soil lightened with sandy soil meets the requirements. Put plenty of drainage in the pot. People often complain because begonias have a bad habit of shedding their leaves. This habit is but a hint to the wise. For it means usually that the plant has had either too much or too little water, though, to be sure, when begonias have just been taken indoors or their places changed they will shed their leaves.

If one has a greenhouse any of these plants mentioned can be raised in it. Of course, pot culture

Park Hill boys in their own home garden where practical work is done

is not the only line of plant culture to follow in greenhouse work. The benches may be filled in as solid beds. Then chrysanthemums make a good fall plant to use; later, try sweet peas and stock in these beds. Do not forget geraniums.

Miss Susan B. Sipe, so well known because of her practical solution of the school garden problem in Washington, D. C., has for years helped out in the indoor plant work for the elementary schools. Miss Sipe writes as follows:

"For several years we have been growing Boston ferns in our greenhouses for school rooms. We buy some plants and then propagate some by runners. I have found the Boston fern and aspidistra the most satisfactory school room plants. I let the city teachers know that I am willing to fill their boxes as class work if they will provide the boxes. All they do is to send the empty boxes which are returned to them, filled, by the school transfer wagons. Of course there is a limit to the number filled, usually about fifty a year. For outdoor distribution, we raise geraniums from cuttings; moonvines in the same way; cannas by root cuttings; scarlet sage from seed; privet cuttings for hedges and quite a number of perennials. We also raise all the tomato plants for school gardens. This work is done by the student teachers of the Normal School in the greenhouses. The Secretary of Agriculture, realizing the necessity of training teachers in elementary horticulture and agriculture, allows us the privileges we have at the Department greenhouses."

What Iowa is Doing for School Gardens

WHY should the State of Iowa become interested in School Gardens? It is already a rural state, with plenty of room, and its interests are centred chiefly in agriculture. For the crowded tenement districts of New York and Chicago — "the slums" — of course, and for the bare sand-lot towns of mill hands on the south shore of Lake Michigan, such a subject is very appropriate, and one can grow eloquent over it. But to organize school garden workers in Iowa — would it not be like carrying coals to Newcastle?

Scabiosa, not well known, but one of the best of annuals. Excellent for cutting

Let the answer to this be squarely given. There is no state in the Union where school gardens can work out better results than here. As for the need of school gardens, that exists everywhere; but it will not do for a State that has the unenviable record of an actual decrease in population from 1900 to 1910 to be at all supercilious about movements affecting the comfort, enjoyment, health and welfare of the people.

Why did Iowa fall off in population? With her unsurpassed climate, her endless variety of scenery, her proverbial healthfulness, her public order and progress, why did not the census reveal, rather, the surprising growth?

The answer is found in the agricultural conditions. Farm machinery has largely done away with the farm hands in the production of the great staple field crops. Great landed estates have grown up and are not yet divided up into small farms. Manufacturers do not seek locations among such estates. Monotony and cheerless lives are found amid great wealth where such estates exist.

What Iowa needs is not to become filled with congested factory towns of smoke and noise on the one hand, nor to be a vast expanse of machine operated farms for the production of the few great agricultural crops, on the other. What Iowa needs is to become diversified — to have the mass of her population near to the land and settled in suburban communities surrounding centres of manufacturing industry and trade.

Great changes do not come in a day. They come when the people are prepared for them. Can you suggest a state in which the school garden could do better work in this line than in Iowa?

Iowa has done little in the way of organized, systematic work for school gardens. This statement will awaken surprise among those who, more than a thousand miles away, have heard of the work of her Mothers' Clubs, have read of superintendents' fostering of home gardening by the boys and girls and have seen pictures of the "Park Life" boys at work in the field in vacation season. Thoughtful men and women of Iowa have done much to foster a love of nature and industries relating to the garden, field, and grove. Yet the fact remains that this work has not been organized as it should be, and that the work of organization is now to be done.

Iowa is now ready to move forward under a state organization. Heretofore there has been much accomplished by individual or local efforts. Perhaps in no other state has there been such a variety of plans of work thus far, and probably no other state could show more done by independent workers for gardening by boys and girls.

In many counties teachers have brought to the school room the enthusiasm awakened at the Farmers' Institute, and have stimulated the pupils to do gardening at home. In cities the Mothers' Clubs have lent their influence for garden work by distribution of seeds among children of a great many families and by warm encouragement of movements for beautifying home grounds. The Boy Scouts have had an influence in drawing the minds of youths to the scenes of nature and have inculcated a love of life in the woodlands and on the plain. At Dubuque, for four successive years, the "Park Life" boys have labored in the garden, actually raising produce for sale, and availing themselves of the income therefrom to defray in considerable part the expenses of camp and travel in the summer outings which have become famous throughout the nation.

Much has been accomplished far and near in reference to the garden work of Iowa boys and girls; and it will come as a matter of surprise to people in various states to learn that until now we have had actually no state organization in Iowa for the promotion of school gardens.

Now, let us not get the idea that school gardens are for the purpose mainly to raise things for profit, to train for trucksters or farmers; but chiefly for the purpose of teaching how to live, how to enjoy, and how to be inspired with natural things.

The tuberous rooted begonias are easy to raise and well suited to withstand class conditions

It is to be noted that there are three distinct purposes kept in mind in this connection in Iowa which are not touched upon at all in the circular of the national organization.

First of these is the promotion of the health of the pupil by the occupation in the open air. An anæmic child will often remain in his seat at recess for want of incentive to go out of the school room. The spur of duty to a plant, or of curiosity to its unfolding will induce many an effort to seek the open air.

In the second place, some of the Iowa plans have had in their view the supplying of employment and recreation for the vacation period. Destructive work is easy. Constructive work is necessary. Towns and cities may pass curfew laws to keep boys and girls off the streets; may shut against them the doors of unwholesome amusement; may require all to be at home at certain hours, etc.; but in this there is nothing of construction — nothing whatever. The time is coming when school gardens will solve the vacation problem.

Finally, in Iowa as in Cleveland, something of direct material returns. For instance, in many counties of Iowa, boys and girls have planted corn on their own home grounds with the understanding that the corn raised should be their own to supply spending money. These were not strictly school gardens, it is true, but an extension of school gardens ideas on practical lines; the seeds and the instructions were both dispensed by the schools.

In Dubuque children of the poor have raised large amounts of fresh vegetables in their rear yards, and have thus contributed nobly to the support of the family, easing the heavy burden resting upon the bread winner and providing simple luxuries of the table which otherwise the family could not have enjoyed. And all this helps to advertise the Dubuque market all over the country on account of the low prices of the various produce which can be raised in the little home gardens by having the surplus disposed of at any price so as not to have it on the hands wasting.

With school gardens for the summer, we may yet have school all the year round.

B. J. HORCHEM
Chairman for Iowa, School Garden Association of America

Raising Japanese Iris from Seed

HOW many amateur gardeners know that Japanese iris can be easily grown at home from seed and will flower abundantly the second year?

Part of the seed from which the iris shown in the accompanying photograph was raised was saved from our own and our neighbors' plants, and part of it was purchased. It is possible to buy only mixed colors, as named seed is not a possibility. As a rule, home-saved seed germinates much better, as it is certain to be fresh.

The seed-bed was prepared late in the fall and the seed was sown early in November, in rows six inches apart. After the ground froze, the bed was covered with a mulch of manure and straw to prevent the frost from heaving the seeds

Japanese iris raised from seed sown in November flowered in profusion two years later

out of the ground. They remained dormant all winter and germinated in the spring. They came up well, painting the rows a solid line of green. When the young plants were four or five inches high they were transplanted into a row in the vegetable garden, where they received wheel-hoe cultivation all summer.

By the first week of September there were 115 fine, strong plants ready to be placed in their permanent location. This is in our wild garden, where they have amply proved their adaptability to naturalizing, for the plants placed there have multiplied more generously and produced more and larger blossoms than the plants in the borders. They have received no care but a mulch of cow manure every fall.

The background for these irises is a red birch, against whose dainty foliage the blossoms are a splendid sight. The group shown contains nine varieties, and numbered its blooms by the score the first spring and by the hundreds the next.

Pennsylvania. FLORENCE B. CATHCART.

An Unusual Begonia

THERE are over one hundred different kinds of begonia in cultivation, but none of them is more interesting to a collector of plants than *B. digitata* (usually spoken of among gardeners as *B. palmata*). All begonias but this look alike.

The latest books on travel and biography may be obtained through the Readers' Service

This one seems, at first glance, as though it were a castor bean or aralia, but upon closer examination the leaves are found to be much more and deeper divided. There are ten to twelve segments and the leaf is six inches in diameter. It is useful only as a foliage plant, for the flowers are small and inconspicuous, and it is a plant seldom grown.

The plant makes an upright growth and seldom branches to any extent, but very pretty plants can be had by pinching out the top when the plant is only ten or twelve inches high. This will cause side shoots to start.

To propagate, tip cuttings are used. On the plant illustrated there is a shoot starting in the axil of each leaf. These are to be carefully taken out. with

This may look like a castor bean plant, but it really is *Begonia digitata*

a little heel, if possible, and put in the cutting bench, the leaves having been cropped a little to diminish the leaf surface. The best time to propagate is in the winter when there is plenty of bottom heat in the cutting bench.

All begonias delight in a rich soil in which there is plenty of humus, and this one is no exception to the rule. A soil made from two parts fibrous loam, one part leaf mold, one part well-decayed manure and one part sand will give excellent results. It requires a night temperature of 55 to 60 degrees with a rise of 10 or 15 degrees during the day. P. T. BARNES.

A Tractable Windflower

OF THE two common native windflowers in our part of New England, I find the rue anemone (*Syndesmon thalictroides*) as tractable when transplanted to the home grounds as the wood anemone (*A. nemorosa*) is the reverse. Though I plant the latter under shrubs, I can not persuade it to flower. The rue anemone, on the other hand, has done so well by me that I should like to recommend it — not so much for the garden proper as for the shrubbery. It lifts easily, as it is tuberous, whereas *Anemone nemorosa*, which I believe has become *A. quinquefolia* since I studied botany, has a most elusive root stock that makes it very difficult to dig up.

Connecticut. H. S. A.

Late Fall Planting

IN MY experience the fall of the year is the best time to set out an orchard, or in fact to transplant any kind of tree, whether for ornamental or practical use. There are exceptions, however, and trees of a tender nature, such as magnolias and peaches, are not safe for fall planting. The shock of transplanting, followed by a severe winter, appears to be more than many trees can stand.

One important factor in fall planting is that the sun is not so hot and drying as in spring. There may be as much wind, causing the roots to dry, but a wet covering should always be kept over the roots for protection while planting is going on. And usually the ground is in a better condition to receive them, and we are not so likely to have a dry November as a dry spring.

Wet the soil and lightly pack it around the roots. Bank a few shovelsful of earth around the roots to shed the water and protect the trees from mice. This applies to ornamental trees as well as to orchard trees. I have seen trees but a few feet from a house badly damaged by mice eating the bark just above the ground.

Another very important factor in favor of fall planting is the fact that seldom, if ever, does the nurseryman make a mistake in shipping an order, as he has plenty of time. The trees are selected, when dug from the nursery row, and packed for shipment, while if held over for spring delivery they are stored over winter in a cellar, tied up in bundles and then shipped during the rush of the season.

In the spring the ground should be dug or plowed away from the roots a little so that the warm rains may soak in, and about a week later the ground can be leveled up again. After that, frequent cultivation will materially help their growth. If trees are planted in the lawn, leave a circular spot at least three feet across for digging around to keep the soil open and soft.

The trimming can be done at time of planting or early in spring, before the buds start. I have tried both methods, and cannot see any difference in the results.

New York ARTHUR E. BELL.

Lime-Sulphur Spray Compound

KILLING San Jose scale is only one of a number of things the standard lime-sulphur compound is good for, in garden and greenhouse. For grapes and plums in the open I prefer it to bordeaux. It does not scar the fruit; and peach growers hold that as a summer spray, dilute, it makes brilliant sweet fruit. Certainly I get brilliant sweet peaches from using it, in conjunction with plenty of muriate of potash on the soil around the trees in May and June. The waxy rot diminishes on peach trees that have a dormant spraying for scale; it vanishes, if to the dormant sprayings be added two summer doses of the dilute compound. Grape rot is prevented in the same way. The dilute solution has almost no effect on the hands of the operator, and is cleaner than bordeaux mixture to use.

Pots, boxes, and seedpans, if not new, are likely to hold spores of mildew or "damping off" rot dangerous to tomato, aster, verbena, pansy, dahlia, or scarlet sage seedlings. Any crock or box immersed five minutes in lime sulphur and water at half the scale-killing dilution, is sterilized and safer than ordinary. Asters are very subject to damping off when young. If the contagion shows in a batch, mix lime-sulphur very weak, so that the water is hardly more than a bright canary yellow, and pour quickly into the pans and flats so as to fill the surface evenly and float the seed-leaves. Pour off. As a general rule, most of the seedlings attacked will rally after such treatment. I have had them live with their stems visibly withered and contracted on one side at the ground, where the fungus appeared to have left a wound. The spread of the infection to healthy plants ceases after the disinfecting wash. So much as soaks into the top soil does not retard growth of roots in the least.

Delphinium "blacks" apparently lives over winter in the hollow stems of the plants, or in rubbish over the crowns. Clear a delphinium bed thoroughly in March of any leaves, weeds, or woody fibre. When new shoots are two inches high, spray them, the crowns, and the surface of the whole bed

with scale-killing strength lime-sulphur. Not a leaf of the apparently tender young greenery scorches. Delphiniums like it as a beverage. A well cleaned bed that is liberally dosed with this delicious compound in spring cannot develop "blacks." If contagion sets in from some neighbor's plants, which seems frequently to happen from yard to yard in town, summer sprayings cure the trouble. The lime-sulphur is ten times as efficacious on these plants as bordeaux, is not visible after it dries, and is not so dirty to put on.

Pennsylvania. E. S. JOHNSON.

The Approach of Winter

WHEAT, rye and oats are paying crops, as well as soil enrichers. They supply humus, of which the soil in the South is usually deficient; they also tend to exterminate diseases. Therefore I very strongly recommend that wheat and oats be planted now on black root or cotton wilt infected soil. These are also among the cheapest crops to grow; they can be produced with less work than any other. Prepare the soil thoroughly, breaking it fine and even so as to keep down weeds.

Harvest rutabagas during the month. Store the same way as you do sweet potatoes. See last month's reminder for full particulars.

Sow more turnips, mustard and kale. Continue to plant onion sets for main crop. Store winter squashes and pumpkins.

Sow seed of lettuce now; also beets and carrot.

White potatoes may be planted in Florida, cabbage plants set out in the open, and tomatoes sown in hotbeds.

Clear the vegetable garden of all rubbish and plow it; let in a few hens while you are plowing so that they can catch the insects.

Sow cabbage seed in coldframes.

Keep the stables filled with bedding material, such as leaves and straw, as this is the principal season for making compost to enrich the soil.

It is a good time to start blanching collard leaves. THE GARDEN MAGAZINE for June 1908, page 290, tells how to do it. When blanched they are almost equal to best cabbage.

A few horseradish roots may be planted during this month.

Remember: The fruiting of some vegetables may be lengthened by protecting them from light frost that is likely to occur about the middle of this month.

Onion seed may be sown in coldframes in the Middle South, in hotbeds in the upper South, and in the open ground in the lower South for transplanting. In the lower South, when sown in the open, there may not be any need for transplanting.

Be sure to sow a few sweet peas during the month. Sow again in the spring and note the difference in the plants and flowers.

Hardy violet beds may be started now. A good collection of violets is well worth while and is easy to grow, more especially if started at this season of the year.

Do not forget to take in the plants for house decoration before the frost gets them.

Seed of pansies may also be sown now in coldframes.

This month is good time for planting iris; if you can give these a moist spot they will do well.

Continue to set strawberry plants and fruit and shade trees.

Georgia. THOMAS J. STEED.

Insect Pests of Farm, Garden and Orchard. By E. Dwight Sanderson. John Wiley & Sons, New York. Illustrated; 684 pages; price, $3.00 net.

When any one chapter, or even a single page, may mean hundreds of dollars' worth of bettered or rescued crops, six hundred odd pages of highly important facts and excellent illustrations for three dollars is assuredly good measure. This is the best and most complete work of its kind ever published. Discussing in the first six chapters the extent of insect injury, the various beneficial insects, the typical structure and development of "bugs," the general and specific methods of combatting them and the making and application of insecticides, Professor Sanderson then takes up in turn each type of farm, garden and orchard crop, describes its important enemies and gives clear directions as to when and how to exterminate them.

Handbook of Nature Study. By Anna Botsford Comstock. Comstock Publishing Co., Ithaca, N. Y. Illustrated; 950 pages; price, $3.25 net.

A book of nature lessons based on the plan of the Cornell Leaflets. The book is full of useful and easily available information. Children could use it as a reference book, for it is written in language which the children, at least of the upper school, could follow.

Poultry Foods and Feeding. By Duncan Forbes Laurie. Cassell & Company, New York. 186 pages; price, $1 net.

The author calls this a "Manual for All Breeders." About eighty-eight pages, containing practical, useful data on the physiology of digestion, directions for actual poultry feeding and valuable analyses of various feeds, justify the sub-title. The remainder, discussing in highly technical manner the chemical composition of foods and comparing the several proteins, hydrocarbons, etc., will prove of value, in our opinion, only to the scientific student or investigator.

Myths and Legends of Flowers, Trees, Fruits and Plants. By Charles M. Skinner. J. B. Lippincott Company, Philadelphia, Pa. Illustrated; 300 pages; price, $1.50 net.

To those who love the mystical this book will be a real treasure. It is full from cover to cover of quaint tales and legends which surround the history of plants. It is as interesting as our old fairy tales.

Practical Agricultural Chemistry. By S. J. M. Auld and D. R. Edwards-Ker. E. P. Dutton and Co., New York. Illustrated; 243 pages; price, $1.75, net.

A concise, clear, well arranged manual of laboratory technique for the use of those already familiar with general qualitative and quantitative analyses. Successive sections deal with Plant Constituents and Germination Phenomena; the Constituent Properties and Physical and Chemical Analyses of Soils; the Composition of Manures, Fertilizer and Feeding Stuffs; the Chemistry of Dairy Products; and the Examination of Waters and Soaps. The more complicated types of apparatus are described and illustrated and the latest, more technical methods explained in detail. For all who plan a serious study of any phase of farm chemistry, this book will be of great value.

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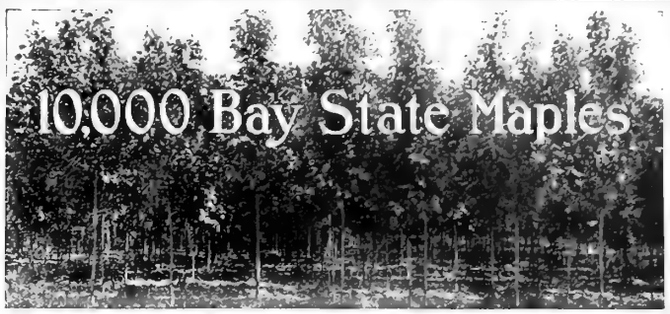

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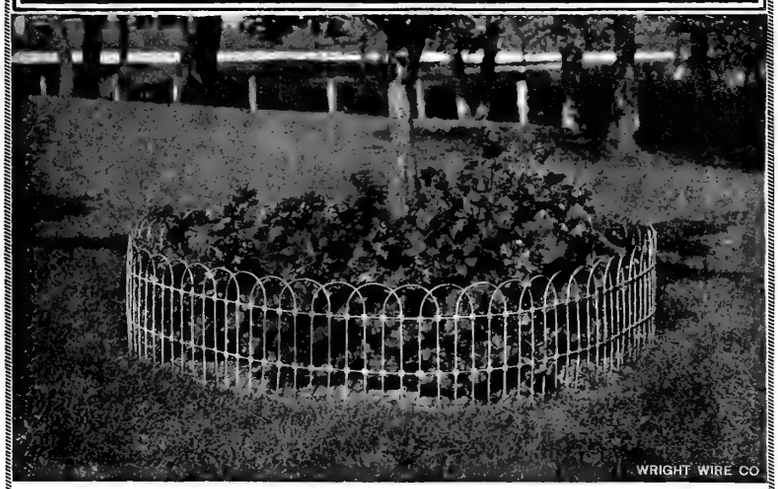

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DECEMBER
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THE GARDEN MAGAZINE

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THE TALK OF THE OFFICE

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May we suggest that you look at these books at your local bookseller's shop? We have mentioned only those of this fall season and we have listed them alphabetically by authors and attempted no description because we hope you will look at the books themselves. If you can't find them at your local bookseller's, we will send any or all on approval for your inspection, so really every post-office is our branch bookstore. All that we ask is that you should pay the forwarding charge. If you return the books, we will pay the return charge. We trust that you will think this proposition fair.

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READERS' SERVICE

All Your Problems Solved

Pruning Norway spruce

In trimming limbs on Norway spruce, should the branch be cut close to the trunk or should one or two inches of the branch remain? In which case will the least bleeding of the tree occur?—I. S. A., New Jersey.

—It is an invariable law that, in puning, all cuts be made as close as possible to the parent trunk even if the exposed surface is five or six times as large as it otherwise would be. A short stub will die and new bark will not grow over dead wood.

Improving the soil for vegetables

For several years I have had a small garden, the soil in which is clay, to which fine ashes from soft coal and manure has been added. To a space 33 x 35 ft. six loads of manure have been spread in three seasons, also some lime. The soil is moist and kept from weeds, but peas turn brown and do not produce; lima beans produce very poorly; lettuce and cauliflower do not "head up"; beets, salsify, turnips, etc., grow poorly; string beans, chard, cabbage, endive, summer squash, tomatoes, and corn do fairly well; Hubbard squash and cucumbers rot away where the vine leaves the ground. What can I do about such conditions?—H. D. J., Pennsylvania.

—My first thought is that the soil generally lacks tilth. This may be due to several causes, singly or in combination. It is possible that the soil is not top soil but is soil filled in from excavations. It is possible that being a clay soil it does not aërate properly and may be underlaid by an impermeable hardpan which may need breaking through. The latter condition would result in a cold, dense, undrained soil which would naturally sour. The evidence seems to point clearly to insufficient root action. Some improvement has, no doubt, been noticed by the addition of the coal ashes and manure, but these additions may not have been great enough. We should like to know how deeply you cultivate. Has the hardpan ever been broken? If not, it is very clear that you should accomplish this in some way as by coulter plowing or even by discharging dynamite in the ground. The same result might be achieved by double trenching, being sure that the soil is broken to the depth of two feet and loosened but not inverted. Continued additions of lightening material, such as coal ashes or sand, will be of benefit; but unless there is aëration from the bottom any manure you put in will remain largely unavailable and will sour in the soil, a condition which can, to some extent, be corrected by the addition of lime. Clay soils are usually potentially very fertile, and they need breaking up and lightening more than enriching. The fact that your soil is moist makes us suspicious that it is not sufficiently drained, and perhaps tile draining at the depth of three feet may be necessary. Tile drainage improves any heavy soil and if it is necessary to do this the work should be done this winter. If this is not done dig up the soil and leave it in rough ridges and furrows as deep as you can conveniently make them, and allow the frost to weather the soil during the winter. Lime of itself will improve clay lands merely because it flocculates the soil. Of all soils, a tenacious, wet clay is the most difficult to put in condition, but when once reclaimed it becomes very responsive. You will find some suggestive remarks on the cultivation of lettuce in the February, 1913, issue of THE GARDEN MAGAZINE. The kind of lettuce you select is an important factor. Some varieties never head, which is a fact that is often lost sight of. Grand Rapids is no good when it is grown out of doors and Big Boston fails in the spring but does well in the fall. Cauliflower is essentially a cool climate crop and may be quite unadapted to your location. Lima beans should do well but they will not stand a constantly wet soil. Without further knowledge of your conditions, we believe you must improve your drainage and soil conditions.

The Readers' Service gives information about investments

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DECEMBER, 1913

SUBSCRIPTION: $1.50 a year Single copies, 15 cts.

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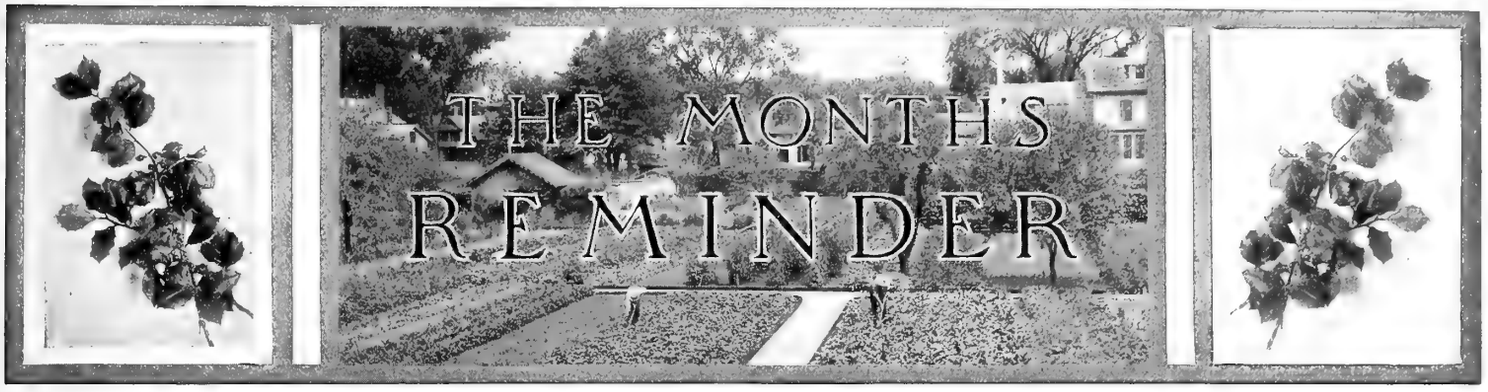
The Garden Magazine

VOLUME XVIII DECEMBER, 1913 NUMBER 5



TO GET the maximum enjoyment from December you must be an indoor gardener. Of course there are plenty of days when odd jobs can be done outdoors, but to keep up a real, live interest in growing things a greenhouse, or a hotbed, or even a few pots and boxes in a sunny south window, is decidedly essential.

The special requirements of indoor plants—those to which you must pay particular attention — have to do with moisture, temperature, ventilation and light.

Moisture. Because you cannot use a hose or watering pot as freely indoors as in the garden, you must imitate natural conditions as nearly as possible in other ways. Whenever you water, soak the soil thoroughly. But do this only when it is clearly needed; in other words, don't keep the soil wet by daily sprinkling but wait till it tends toward dryness. Then water generously.

Pots and tubs will need more water than benches or beds because of the additional surface they expose to the air. So, too, plants in a dwelling will dry out much more quickly than those in a greenhouse because of the much less humid atmosphere that surrounds them. Both our house plants and our own health would benefit if we would offset the drying effects of radiator heat by keeping open dishes of water about the rooms.

Temperature. Strictly speaking, temperature conditions in dwellings are just the opposite of what plants require and which the greenhouse attempts to supply. By day, when the sun is up and the air relatively warm, we start up the furnace to keep the house "comfortable." At night when, more than ever, the plants need protection, we bank the fires and open the windows to "air out the house." Don't forget, however, that *we* spend the night under blankets, and that the palms, ferns, rubber plants, etc., will appreciate either newspaper covers or a warm room to themselves.

Ventilation. Fresh air is essential to plant growth, but taken in the form of cold drafts it is deadly. Similarly, coal or illuminating gas will soon destroy the thriftiest of specimens. Some, such as the Jerusalem cherry, are so susceptible that a plant can be kept as a safety valve or "gas detector," for it will shed its leaves at the slightest whiff. Your duty, then, is to keep nearby windows closed, to pull down the shades or move the plants from the windows at night, and to keep the door to the cellar closed when feeding coal to the furnace.

Light. The average window rarely admits too much light for any plant, but in the greenhouse brilliant sunlight often necessitates shading, especially of seedlings, newly made cuttings, etc.

Whenever the light comes entirely from one side, it will be necessary to offset the effects of heliotropism and the tendency of the plant to become one sided, by turning it around frequently.

With this groundwork of general principles, on which to base the detailed care required by various species and families, even the novice should find the raising of house plants quite within his abilities.

Opportunities Indoors

WHERE a temperature of 50 to 55 degrees is available, cauliflower seed may be sown for later transplanting to a sheltered coldframe.

Amaryllis bulbs which have been resting will soon begin to show signs of blooming. When the flower spikes show, move the bulbs to a warm, moist house and give the soil a surface dressing of rich compost. Water carefully.

These are the important fertilizing days for the early indoor tomato crop. Pollinate the flowers every day or two. If the weather is bright and dry, the pollen can be distributed by sharply rapping each flower stem. But on cool, cloudy days use a watch glass and a camel's hair brush and hand pollinate each blossom.

Parsley and chives are among the easiest to grow and most useful of winter green things. They will thrive in a box or basket on a kitchen window sill. Where there is room for a flat or two (or in a bench), sow a pinch of lettuce seed every ten days or so for succession.

This is the time to repot fuchsias. Knock them out carefully, holding one hand across the top of the pot and tapping the edge on a bench or table. Shake out all the loose, worn out soil and replace with good compost. In nearly every case the same pot should be used to prevent excessive top growth that follows a suddenly increased root system.

As the chrysanthemums cease blooming, cut them back to within a few inches of the ground, and store these "stock plants" in a pit, cool greenhouse, light cellar or better still a deep coldframe, where a light touch of frost will do no harm.

Among the plants that bloomed in November and were put away first, some should have by this time produced shoots that can be taken off as cuttings.

This is, by the way, but one type of cutting that can be made during winter for the propagation of herbaceous perennials. *Veronica subsessilis*, perennial phlox and similar species, of which the tops die down each winter, can be dug from the garden in late fall, stored away, and cuttings taken from time to time exactly as in the case of the chrysanthemum.

Of perennials such as lavender (*Lavendula vera*), sweet William (*Dianthus barbatus*), *Santolina incana*, candytuft (*Iberis semperflorens*, var. *superba*), etc., wood may be taken at almost any time during the winter. During the worst weather keep plants from which cuttings are desired covered with mats.

If frozen, the cuttings should be drenched with water when first brought in; they should then be trimmed and stood in water for a couple of hours before planting.

Until established, it is well to shade the beds by day, gradually removing the covering earlier and putting it on later, until it can be quite done away with. To avoid disturbing the cuttings by watering, sprinkle right on the shades instead of removing them.

Root cuttings, the third type, are the easiest of all to handle and may be taken from Japanese anemone (*Anemone Japonica*), Stokes' aster (*Stokesia cyanea*), oriental poppy (*Papaver orientale*), alkanet (*Anchusa Italica*), perennial phlox, and many others. The two or three inch pieces of root, or in some cases, (more accurately), underground stem, should be plunged in sand deep enough so that after watering they will show but an eighth of an inch above the surface. The one important precaution is to keep the tops of all the cuttings one way so that none will be plunged upside down in the sand.

For multiplying carnations take the young growths that appear in the axils of the leaves. Cut away a little of the foliage and treat like other cuttings.

Calceolaria and cineraria plants now in frames should be moved to a cool greenhouse where they can receive abundant sunshine and where there is no chance of frost.

News Notes and Comments

CHRISTMAS TREES WITH ROOTS

IT SEEMS ridiculously inconsistent that so many garden lovers, whose aim it is to see and make things grow, should support an archaic Christmas tree custom that means the destruction each year of thousands and thousands of young evergreen saplings.

It was this that led us, in the past, to urge the use of *living trees* and their subsequent planting in the home grounds rather than the use of cut trees and their destruction on " Twelfth Night."

This year there comes from one of our readers a practical letter that we gladly put before the others:

"It has always seemed wicked to denude our beautiful young trees for Christmas use. Even granting that many children are amused by them, the fact remains that the enjoyment is short lived.

"Yet no one is fonder of Christmas trees than I, and we try to have one each year to brighten the Yuletide. But — we are putting into practice the thought 'Why not have Christmas trees with roots?'

"For the past five years I have bought my trees from the nearest nurseryman, trying to have a different kind each time — a spruce, a hemlock, a balsam fir, a Nordman's fir, and so on. This year I think it will be a white pine.

"The trees are planted in a box or keg and kept in the house until after New Year's Day, then planted outdoors as soon as possible. It is best not to buy too large a tree as the smaller ones stand transplanting better. Of the five I have used two have died; but in those that have lived, and will live, I am fully repaid for the effort made each season." — Aime B. L. Polk., Penna.

The point that the smaller specimens are best is well taken; moreover, it should be remembered that nursery stock is better to be used since field grown trees will rarely stand the shock of potting and replanting unless root pruned in preparation, early in the previous fall or summer.

But, as our correspondent truly remarks, even if a good many attempts fail, the occasional success giving such results as those pictured below are generous reward. And if instead of a half million dead trees of the old sort, there can be a third or even a tithe of this number of new, living specimens planted in yards or parks, or school grounds, each year, the "Christmas Tree Spirit" will take on a fresh significance.

This nursery tree used for Christmas five years ago is now growing finely

Four years ago this tree was bought and later planted out as shown

An evergreen conifer lifted thus in winter with a good solid ball of earth and wrapped with burlap should move safely from any nursery. A tree lifted from the woods if not previously root-pruned would need a much larger ball or will surely die.

USING THE SEED CATALOGUES

BEFORE long, the advance guard of the coming season's catalogues will begin to arrive.

The selection of the catalogue from which to order, and the seedsman with whom to do business, is almost as difficult as the selection of the best varieties of seeds for one's purpose. After this problem has been solved, a short study of the introductory part of the catalogues usually makes the ordering of seeds comparatively easy.

Yet it is extremely necessary that you should analyze your needs thoroughly and make up your mind what you want before ever putting a pen or pencil on paper. Be sure that you know whether you want "flat green-podded," or "round green-podded," "flat wax-podded" or "round wax-podded" beans. Then, there are lima beans that climb on poles, and bush limas for the home garden of small size. About 50 varieties of beets, of early, mid-season and late maturity, are represented in most seed catalogues, and cabbages offer an even greater diversity of varieties, shapes, qualities, etc.

After deciding what you want, and studying the introductory directions to avoid making mistakes

which are apt to prove annoying to both yourself and the seedsmen, proceed to "check off" on the margin of the book such varieties of vegetables or flowers as you may require.

Most catalogues have from six to a dozen or more of the first pages devoted to novelties. Whatever your regular order, test some of these every year in a small separate bed. It pays, for only in this way can you hope to become acquainted with the progress of horticulture as revealed in the seed catalogues.

In making your selection you will probably be guided largely by illustrations rather than descriptions, for apparently the buying public will never outgrow the picture book stage of development.

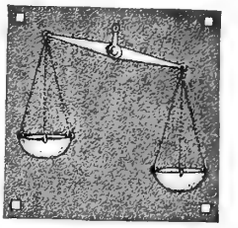
Fortunately the increased use of photographic reproductions makes exaggeration more difficult. Still, it is only natural that seedsmen should use as illustrations the very choicest specimens they can get. Of course, the person who buys on this basis and expects under ordinary conditions to get products every bit as good as those shown in the catalogue is in most cases disappointed.

After checking the sorts wanted, transfer the data to the order sheet supplied with every catalogue. By utilizing such helps as are offered by seedsmen you will aid the house materially in filling your order speedily and correctly. When a clerk handles hundreds of orders every day, he is bound to be more familiar with the form of a regular order-sheet.

In estimating quantities, remember that it is wiser to order three packets of three different varieties of beans, lettuce, radishes, etc., than a large quantity of just one kind. Nearly every class of vegetable offers early, mid-season and late sorts, each especially adapted to its own season. You might raise all the lettuce you wanted out of one ounce of Early Curled Simpson, but it would be wiser to order one packet each of Early Curled Simpson for extra early, one of All Season for mid-summer use and one of Iceburg for late summer and fall use. These would give you a perfect succession and insure you more palatable lettuce throughout the growing season, while the difference in cost would be only five cents.

WEIGHED IN THE BALANCE

A Review of the Newer Florists' Roses and Carnations



[EDITOR'S NOTE. — *Under this general heading we will publish, from time to time, expert reviews of various newer plants, not necessarily awaiting the test of long extended trial, but rather to call attention to the up-to-date introductions that seem worthy of notice. "Novelty" unfortunately does not necessarily signify improvement also. This first article deals with flowers that are now in season and seen in the recent exhibitions. The true plantsman introducer or raiser of new things seeks criticism; he usually consults the keen analytical judgment of his fellow craftsmen before placing the newcomer on the market. This precaution has not been taken by every raiser, however, and the general public is not buying novelties as freely as formerly. Many in fact refuse to purchase until the thing is thoroughly tested by some one else. But because each novelty does not measure up to our highest expectations is no reason for the condemnation of all. Finally, let it be remembered that conditions of soil, climate, and locality have much to do with success, let alone the actual treatment accorded; and nothing but an actual trial can prove how a certain thing will do with you.*]

I. The Latest in Roses

THE very latest in roses that is being put on the market early in 1914 is Killarney Brilliant. More advance orders have been placed for this novelty than for any of the earlier kinds. This newcomer is from Dickson, the famous Irish rosarian, who also raised the now well known original Killarney. Killarney is today perhaps the most profitable of all commercial roses to grow, on account of its free flowering qualities. It has several faults, however; the flower has too few petals and is too thin for a perfect commercial rose. In summer the color is all that can be desired; but in winter, when subjected to forcing conditions and dull sunless days, the color fades.

The new Killarney Brilliant is a rose of more substance, with more petals, and better keeping qualities, a color that is more brilliant and which does not fade. It is just as free a producer as the original sort, with a more robust habit.

History does not have to carry us back over five years to the time when the old Bride and Bridesmaid were universally grown in both private and commercial greenhouses. Although Killarney had been on the market for fifteen years, it had taken that length of time to convince the conservative that it was a better thing than Bridesmaid. Bridesmaid had a better color and few faults and is still affectionately remembered, but it lost out in quantity.

We have now in Mrs. George Shawyer a rose equal in color to Bridesmaid, and of the same favorite form, but in its keeping qualities and productiveness it is far ahead. It has a rigid stem which Bridesmaid lacked. The stem also is naturally twice as long as either Bridesmaid or Killarney and its behavior to date indicates that it is wonderfully free. Mrs. George Shawyer was widely distributed last winter and all who are growing it speak of it in the highest terms. If the amateur must have just one pink rose in his greenhouse, let him grow Mrs. Shawyer.

Mrs. Charles Russell is another of this year's introductions that occupies a place all by itself. It comes from a race of mixed progenitors and as a hybrid would be hard to classify. In some ways it reminds us of the old fashioned cabbage rose, particularly its perfume. In size it equals the American Beauty. The color is a constant double pink and does not fade out to magenta as does the American Beauty. It has a perfectly rigid stem and naturally produces more long stems than it does short ones. (Many roses under forcing conditions produce a lot of short stemmed roses and only once in a while give us a long exhibition stem, unless they are cut back and pinched for this purpose.)

Mrs. Charles Russell will not produce the quantity of flowers that Killarney or Mrs. George Shawyer will, but on the other hand it will produce three or four times as many as American Beauty, and will fill a place midway between, for it really belongs to the American Beauty class. Mrs. Charles Russell can be successfully grown along with Killarney and others in the same house.

Milady, another of this year's introductions, is fully meeting our expectations. It is filling a long felt want in red roses. Up to this time Richmond has been the standby, with a few General McArthur grown here and there. But Richmond, though a fine color, lacks petals and has not been really successfully grown except by a few experts. Milady has not quite as good a color as Richmond, but nevertheless it is a good red, has a fine full flower with a stiff stem and is very vigorous and productive. It is a rose that can be very easily and successfully grown by the amateur.

Both Milady and Mrs. Russell are American raised roses and both bid fair to become welcome additions to our outdoor collections, as well as for indoor use.

It may seem late to speak of Sunburst as a novelty — it was well distributed as a novelty last year, but the young stock was principally grafted. Grafted stock of all other sorts (excepting yellow roses) is conceded the best for indoor purposes, and very few growers are using anything else. But Sunburst behaved very unsatisfac-

torily on the grafted root during the winter, and most of the growers threw it out. Those who grew it on its own roots were well satisfied with it and this year "own root" stock only is being grown. Thus far the returns are perfectly satisfactory. It is a beautiful rose, much the same color as Mrs. Aaron Ward, but the bud is much longer and pointed (a quality much sought). It has a longer stem and is a freer producer. Sunburst in our opinion is probably a better rose than Lady Hillingdon. The latter is a pure canary yellow which colors up well in winter and is a free producer, but it lacks fulness in size and where space is limited to one sort, our choice would fall on Sunburst.

In passing we desire to speak a good word for Antoine Rivoire (sometimes known as Mrs. Taft) and Radiance. Antoine Rivoire is a general favorite. The buds are finely formed and are a beautiful shell pink in color. It is a clean, vigorous grower with long, stiff stems. The cut flowers always bring the top price in the open market, which is a final test of its general utility.

Radiance is a deep cerise pink and a most vigorous grower so that the veriest amateur in greenhouse management cannot fail to grow it successfully.

Some few growers are trying out this year the much heralded British Queen but thus far the results are very disappointing.

Up until the last two or three years there was a dearth of new roses, particularly American, but the interest now seems to be thoroughly aroused and from now on we may look for additions every year.

II. The Latest in Carnations

WE HAVE spoken of the "dearth of new roses" but we cannot say the same of carnations. They come along with persistent regularity every year. The winter flowering carnation of today is a true American product and it is perhaps the only floral product that the Europeans procure from this side of the water.

Of the newer varieties that are to be distributed this season, perhaps the most striking is Matchless. This is a large white variety for which there is lots of room. We question if it will displace that other sterling white variety, White Wonder, an introduction of two years ago. But there is room for both. Matchless is more vigorous and will unquestionably make a larger plant; it will give longer stems and larger flowers earlier in the season. It is a wonderfully free producer and when you consider its productiveness along with its size, length of stems and general good qualities, you may be sure that it is a novelty to be reckoned with. Excepting White Wonder there is nothing else in white that actually pays to grow. White Enchantress is still largely grown, but with most growers it bursts its calyx so much in dull weather that it is unprofitable.

Princess Dagmar, another novelty of merit, is very highly regarded by all who have seen it. The color is crimson or maroon, a grade not much called for in the New York market, but, strange to say, it meets with a good demand in Boston, Philadelphia, and provincial towns, and the amateur always calls for it. The demand may have been influenced by the fact that there has not been much of this color to offer. Harlowarden and Harry Fenn have been the leaders in the color for many years past. Since the advent of these two, we have had Daheim, Octaroon, Crimson Beauty and others, but they did not reach the commercial standard that we have in other colors, and their cultivation from a commercial standpoint for their color alone has not been warranted.

Last year a limited quantity of British Triumph reached these shores and is proving to be a good carnation. It is a bright, catchy crimson, rather than maroon, and has a bright velvety sheen. It also has the sweetest perfume of any carnation.

Princess Dagmar has a larger flower and longer stem and probably produces a good deal more freely. From the points of quantity and quality they will rank with the best, and there is room for both; but if one crimson only can be grown our fancy would be for Princess Dagmar.

Philadelphia was the centre of admiration when first exhibited at the Carnation Society's convention in Detroit two years ago. In size and length of stem it is not phenomenal, but its color is a beautiful silvery pink, the color that made Fiancée famous. Its habit is robust and it is remarkably free, and it will unquestionably prove to be a grand commercial carnation.

Mrs. Coombes is another pink variety that attracted much attention at the International Flower Show in New York last spring. Standing as it did amongst other pink sorts, its color was so distinct and telling that it could be readily discerned from the opposite side of the hall, and, after all, color is largely what sells a flower, particularly when it possesses the other recognized qualifications.

We need "new blood" in the pink section. Winsor is too small; Gloriosa diseases badly with most growers; and Pink Delight is not profitable except in some favored sections. The newcomers have an open field. Gorgeous, another sterling novelty, from the greatest of all carnation raisers, Peter Fisher, is an "American Beauty" amongst carnations, and gorgeous, as the name implies. The color is hard to describe. The centre of the flower is crimson and vermilion, shading out on the edges to a rose pink. The stem is from three to four feet long and the expanded flower from three and a half to four inches across. The raiser does not claim that it is free, but that it marks a new epoch as Mrs. T. W. Lawson did. It will rank high as an exhibition flower.

Mrs. Cheney is a new variegated sort, with extra heavy markings of red and white. It is quite distinct from Benora (our best variegated sort to date). It is a really attractive flower, very free, is healthy and is really worthy of a place in every collection.

All the foregoing will be offered as novelties this coming season. For several of them heavy orders are already booked, and the demand may exceed the supply.

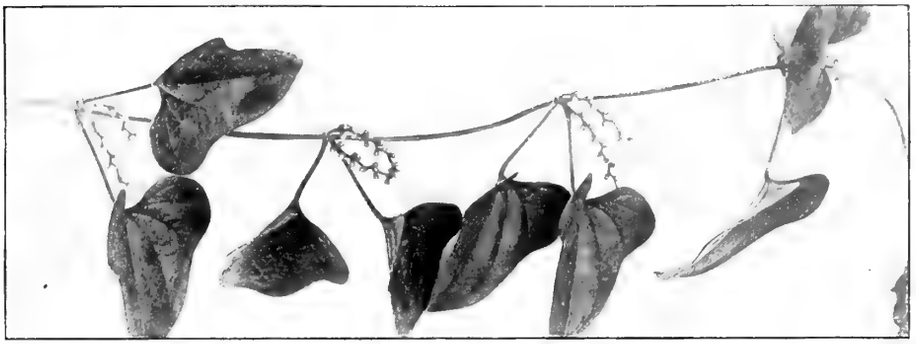
Of the novelties that were distributed last spring, and of which good reports are heard, are Northport, Enchantress Supreme, William Eccles, and Lady Northcliffe.

Northport is free in habit, healthy and vigorous. In color it most resembles the Mrs. T. W. Lawson and Mrs. C. W. Ward. Growing alongside of these old favorites it certainly looks superior in every way and will no doubt displace them.

Enchantress Supreme is a sport of the old favorite Enchantress. Enchantress has stood the test of time better than any other carnation ever raised, and is universally grown to-day. It has the one very bad fault, however, in most places, of bursting its calyx, particularly in dull weather. In some cases as high as 70 per cent. are bursts, and this makes it unprofitable. In Enchantress Supreme the calyx is longer and stronger, and there are very few bursts. The color is also more intense, and does not fade out as the season advances. It produces just as freely and is equally as vigorous and will unquestionably take the place of the older sort in the next two years.

William Eccles is a fine clear scarlet, with long stems, sweet perfume, and a non-bursting calyx. For years Beacon has been the only thing that we have had in red. Beacon is a red rather than a scarlet and has a decided brick red tinge, and like Enchantress it is bursting its calyx from 50 per cent. to 75 per cent., William Eccles does not appear to produce as many shoots as Beacon, but the plants can be set closer in the benches; being practically a non-burster every flower is good. It seems sure to become a standard variety.

Lady Northcliffe is an English variety that has not been much tried here thus far, but what we have seen of it convinces us that it has come to stay for some time. The color is salmon pink somewhat resembling Pink Delight, a color that greatly pleases the ladies. The color is constant at all times and does not fade out as the season advances, which is one drawback to many an otherwise good flower. The flower is not full, but has just enough in it to make a perfect bloom, and a burst calyx is unknown. It has a sweet perfume, and is one of the best keepers we have ever known. The flowers are not as large as some of our newer sorts, but it produces as freely as the old May Day.



Curious History of the Cinnamon Vine

By S. T. Homans, New York

A SUGGESTED SUBSTITUTE FOR THE POTATO THAT BECAME A UNIVERSAL FAVORITE FOR ITS FLOWERS—THE STORY OF ITS INTRODUCTION AND A BIT OF RECENT HISTORY

THE cinnamon vine is so well known in countryside gardens rambling over fence or porch that it has almost dropped from public regard into the rank of the "too common" things. Yet it has a history and association with that grand old pioneer horticulturist, William Prince of Flushing, L. I., that may well make us proud. Incidentally it may be observed that Prince's nurseries gave us other plants that are everywhere popular to-day.

Connected with the story of the introduction of the cinnamon into America are many questions of that day—political, agricultural and sociological; particularly its attempted rivalry of the potato.

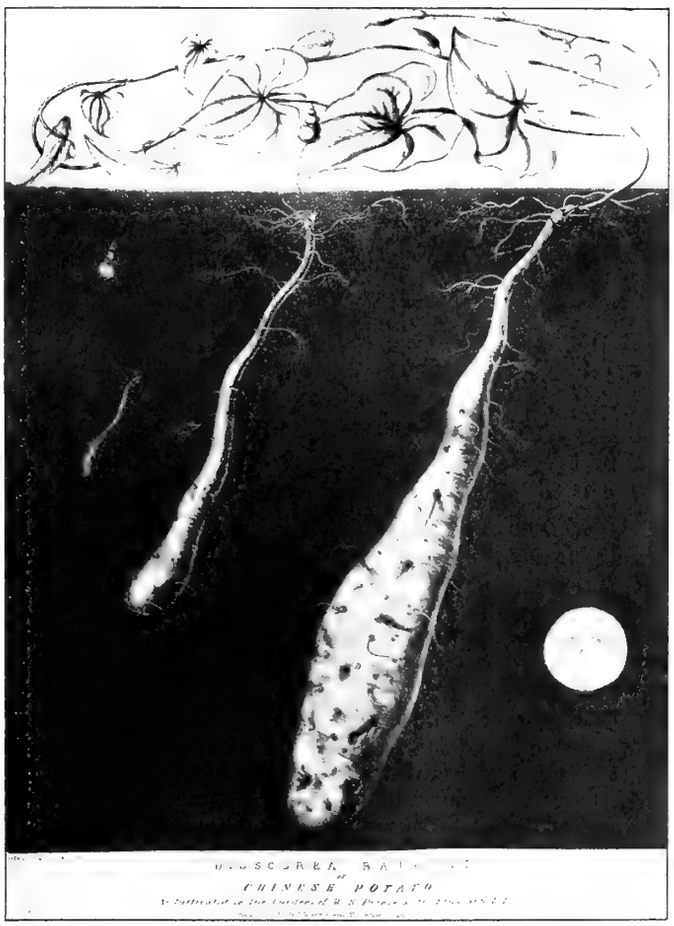
The common white potato, with which we are all familiar, has been known to the English since the days of Sir Walter Raleigh, who took the tubers to England in 1586. The native country of the potato is a matter of doubt, but common report refers to Peru. It is mentioned by a Spanish chronicler as early as 1553 and it seems highly probable that it was introduced into Europe by the Spaniards. Though known to the botanists for some time, its adoption as an esculent was very tardy. It belongs to the family Solanaceæ to which also belong the tomato, eggplant, bitter sweet, and the night-shades, and is known as *Solanum tuberosum*.

The potato, on account of its remarkable nutritive qualities, became the principal article of diet, especially with the laboring classes, of Ireland, to whom it also appealed as producing a maximum of harvest, for a minimum of labor. "One man being able to plant sufficient to supply forty men."

In 1845 there appeared a potato disease, known variously as mildew, murrein and rot, by which whole crops rotted in the ground. The year following was the year of the famine in Ireland, from which thousands died, and it was then the Corn laws were abolished and it was then also that began the great emigration from Ireland. Disease also attacked the potato in America and baffled all efforts at control.

One of the most famous pioneer nurserymen of America, whose nurseries were second only to the Bartram gardens at Philadelphia, Mr. Wm. Prince, became interested in finding a substitute for the potato, provided that it was found impossible to check the disease.

In China they had a potato, which was very carefully and extensively cultivated, being as generally used as our potato here. This was *Dioscorea Batatas*, known by others as *D. Japonica* and *divaricata*, and familiarly as the Chinese yam. "According to the older botanists: "It is a shrub twining leftwards; with a vertical root, covered by a yellow-brown epidermis, emitting many short rootlets, and having an indistinct groove lengthwise. The stem is round, and as thick as a goose quill, violet with white spots, rooting easily when left creeping on the ground. The tuber penetrates about three feet deep, straight down into the soil, is thickest toward the lower end, attaining the size of a man's wrist, and tapers upward to the thickness of the little finger. It has milky mucilaginous, sweetish acrid sap and scarcely any woody fibres. It is cooked by boiling the same length of time as our common potato, and either boiled or baked becomes mellow and dry, as fine



Reproduction of an old print which was distributed in 1856, by W. R. Prince & Co., when introducing the yam as a substitute for the potato. The original was 17⅝ inches high x 14⅛ inches wide and showed the plant in actual size

The root of the cinnamon vine is hardy but the top dies down each fall. It makes an annual growth sufficient to drape a house porch

and white as wheat flour, and as insipid as the common white potato, for which it may easily be mistaken. The smallest ripe tubers weigh about two drachms, the largest over two pounds. Whole tubers, when planted, yield the best crops, but transverse slices of two to four inches produce as fine tubers, and even the stems laid into rich earth root easily and furnish good plants. The flowers are inconspicuous, growing in a spike in the axils of the leaves; after the flowers have faded small tubercles follow them, which are also used to propagate the plant, but it takes two years to develop into a full sized tuber."

Mr. Prince determined to try the experiment of growing the Chinese potato in America possibly to succeed the "Irish" potato, and with that object in view imported a quart of the small tubercles which succeed the flowers and grow in the axils of the leaves. For this quart he paid six hundred dollars. This quantity was then divided into smaller measures, were put up in little tin boxes two inches high and wide by four inches long, the price for each of which was eighty dollars. These were purchased by the different American nurserymen who were interested.

As an experiment it had varied success in different parts of New York State and the West, and "it was found that the yield of the batatas is double that of the common potato, all circumstances considered." It did not meet with universal success, however, as it is very difficult to dig, and in the meantime the potato disease had been checked, and we have now almost forgotten that there ever was a time when it was thought necessary to find a substitute for this most necessary article of food.

So the *Dioscorea Batatas* was diverted from its original use and has become one of our popular ornamental vines. It is absolutely hardy, the tubers remaining in the ground all winter. The vine dies down to the ground every fall, but is of very rapid growth, easily attaining a height of from thirty to forty feet in a season. It has very beautiful triangular, heart-shaped leaves which seem immune from disease and untroubled by insects. It is mostly grown for its foliage as the flowers are very inconspicuous, and would be unnoticed but for their great fragrance.

Some summer day in July and August we go out and are greeted by the sweet odor, which reminds us perhaps of cinnamon, and there we see that our beautiful vine is in flower.

During the past summer a certain popular interest has once again been associated with the plant through a newspaper story in one of the New York dailies reproducing an interview with the woman editor of a Western magazine. She claimed to have "garbed the state of Missouri with cinnamon vines."

Her first tubers were acquired in payment for an advertisement in 1907. A Pennsylvania Quaker wrote to her. "Friend, we would like to take space in thy publication, and we will do so, if thee will take cinnamon vines in exchange for the ad." Thereupon he proceeded to explain the nature of the cinnamon vines, how fast they grow, how decorative they are, and so forth, and mentioned that the first tuber imported from Japan had cost ten dollars. He offered a barrel of tubers, which meant as many as 10,000 plants. This offer was accepted and the tubers offered as premiums for new subscriptions to the periodical. However they arrived too late to be used for that purpose, notwithstanding the offer, and in consequence were sold to florists and the ten cent stores, with the exception of 1,500 planted on the editor's own farm.

"That summer, cinnamon vines began to spring up in every part of St. Louis. North and South St. Louis are now covered with them. You will find them rampant throughout the whole state of Missouri, every old shed or fence in the state now has strings of the plants running up the sides, and you will see them extending over the tops of the houses."

The foliage is really attractive, the flowers small, white, and deliciously fragrant

A Winter Garden For $20.70— By Sadie W. Fenton, Indiana

MY HEALTH has been restored by playing with a winter garden. I was run down by two years of hard work as a professional nurse. I made this winter garden for $20.70 without having steam or furnace heat.

Now, to begin with, remember prices of materials differ in various localities. If, like myself, you live near a large city where there are house wreckers, you may reduce the cost of the building by obtaining your material from them. But select for yourself all material and examine the sash and doors to see that no part is beginning to decay. If possible obtain glass doors or those with upper sash. If the wrecker's lumber is not comparatively new, I advise getting new lumber rather than to use any appearing weather-worn, for on this your sash and glass must rest. Often improved houses are razed to obtain a site for a skyscraper, and thus renders obtainable almost new material.

We decided to build a lean-to on the south side of the house against the outside wall of the dining room, from which we could remove the window and door. Through these apertures we thought sufficient heat would pass from the stove for moderately warm days. As the window did not extend to the floor in that end, we placed a large nickel lamp there when we retired at night.

However, we had not counted on extremely cold weather, and we were compelled to keep the dining room uncomfortably hot in order to maintain the proper temperature for forcing blossoms if not for growth.

We wanted blossoms in December, that bleakest of months, and we had them, too, in abundance. Even one of the currant bushes which I started from cuttings in the fall bloomed in December. Fancy that to you are being wafted the odors of our lilies, hyacinths, tulips, violets, freesias (dearest of bulbous flowers), also a climbing sweet jasmine which covers half the wall and enjoy all with us!

This little lean-to furnishes flowers in winter and plants for early setting outdoors

The palms, ferns, caladiums, rubber plants, grape fruit and cactus not only produce an exotic and tropical appearance but lend an air of superiority over the smaller and more unassuming plants.

Having no chimney into which we could run a stove pipe and not wishing to build one for experimental purposes, we questioned the feasibility of trying a coal heater. "Where would you run out the pipe?" we asked a brick mason. "You could remove a pane of glass and have a small chimney built outside," he replied. I sent him away; his advice was too expensive. I then determined to solve the problem myself.

When the family learned what I proposed they handed me various "funnygraphs," e. g.: "The Fenton Heating System. No pipes to freeze up with the thermometer down to 'freezo.' No sending the men folks down cellar at midnight to fire up. Patent applied for."

Any one can have a tinner cut a hole in the drum of a sheetiron stove and insert a capped pipe in it which will carry the heat to any kind of a metal radiator or drum which one may happen to have, thus making a mighty cheap heating plant and a mighty satisfactory one. In my case the drum was taken from a discarded washing machine. (Now laugh.) I have laughed every time I have looked at it; to think that I accomplished, with what I happened to have, just as much as others did who spent so much for heating plants.

One pane of glass in the rear door had a 6-inch crack in a lower corner, circular in shape. We had a tinner cut a 6-inch hole in a sheet of galvanized tin. This I nailed outside the door with the hole in the tin, over the hole in the glass, having knocked out the cracked corner with the hammer. The pipe passes through the hole in the door and rests on wires which are stapled each side of the pipe to the scantling. Sufficient moisture is furnished by occasional spraying, and a pan of water on the stove.

We dug the trench and built the wall (foundation) of bricks abandoned when the asphalt improvements were made. The four large sashes and door I selected from about 500 in some house wrecker's yards in the large city twenty-five miles away from my home at Aurora, Ind.

We plant only the choicest seeds available, and each spring are busy transplanting into paper and paste-board pots (home made), also tin cans and cereal boxes, so that the plants will not be disturbed when the frost has left the ground.

Crowded? Ye — s, but when the bulbs are through blooming they will be tipped into a box of soil and placed near a cellar window till it's time to dry them off.

We did not build a floor for I wanted to use the earth floor for sinking paper boxes of soil, near the bottom of which are planted sweet peas, which in the spring will be lifted and placed along the wire fence. These will bloom before those planted outside, and both will be preceded by those in the winter garden which are now two feet tall. Our Giant Dwarf tomato plants are sturdy looking youngsters and with the cucumbers to be potted the whole sunny side of the house will be converted into a temporary garden to accommodate the plants. There will be propagating to do also in the spring, as I expect to increase the contents of my little "winter garden" from my outdoor garden plants.

It certainly has paid. Even the canary bird thinks so, and when the pet bird is happy the whole family is happier.

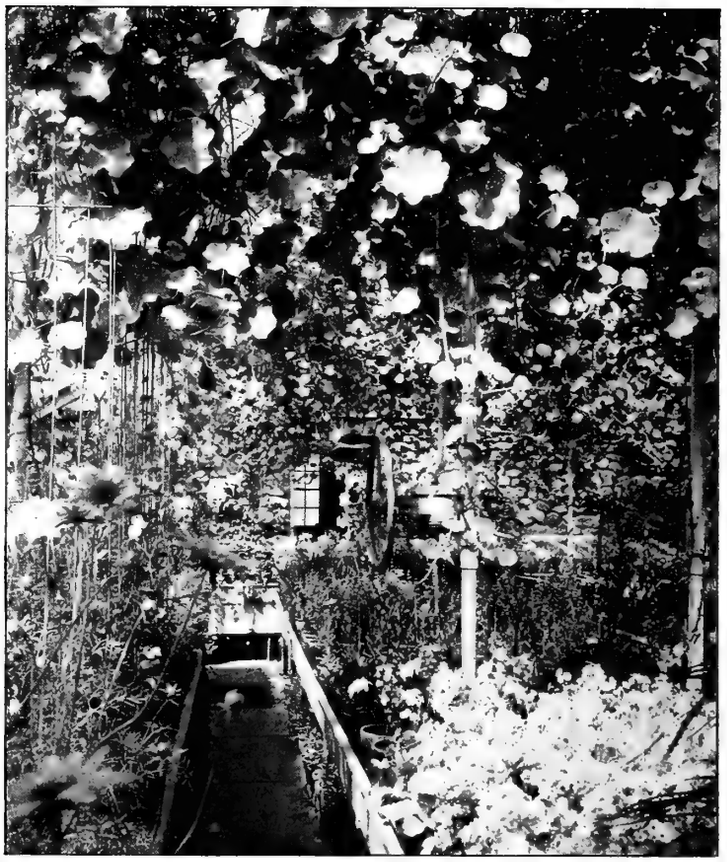
The expense was about as follows:

Four sash and one-door	$ 4.00
Freight	.35
Roof strips	1.00
Roof glass	6.00
Lumber	7.00
Stove pipe	1.10
Putty and staples	.50
Cement	.50
Drayage	.25
Stove (we had)	
	$20.70

To this add a little cost for paint, for in the spring the whole house is to be painted some color against which vines and roses will show to advantage.

A make-shift heating arrangement but it worked! And that's the test after all

Notice how well furnished this house is, due largely to the nasturtiums on the roof. The primroses have given continuous bloom for more than six months



Some of the flowering plants giving color here are Transvaal daisy, cyclamen, azalea, daffodil, tulips, vinca. Photograph made in April

Making Pictures in the Greenhouse — By Arthur G. Eldredge, Illinois.

HERE IS AMPLE PROOF THAT THE GREENHOUSE NEED NOT BE INARTISTIC — A FEW PICTORIAL SUGGESTIONS THAT SHOW SOMETHING BETTER THAN THE COMMON RUN OF THINGS, BUT QUITE EASY TO ATTAIN

SOME people have a certain prejudice against a greenhouse because, as they say, its contents do not make pictures. The facts are, however, that greenhouse interiors may be made charmingly decorative with but a little skill and care. We are just beginning to understand the decorative possibilities of gardening under glass and the accompanying pictures show some things accomplished. In the greenhouses of the Chicago Park Department, Mr. Jens Jensen worked wonders in producing landscapes under glass, as described and pictured in *Country Life in America* for December 15, 1911. But such effects are too expensive for the average individual. It is by applying the same principles of concealing the structural lines and producing naturalistic effects that the small home owner may hope to have a real garden the year round — and at a cost not much greater than that of the ordinary greenhouse equipment.

A miniature water garden is made by means of a tub in which are the lesser aquatics and goldfish, always a source of interest.

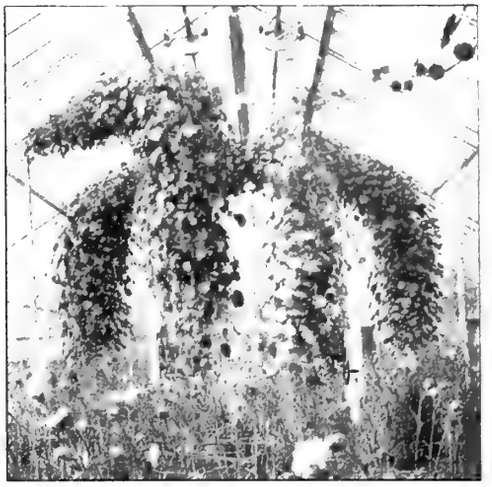
The more universal understanding and application of the principles of landscape art is finding many new opportunities in the designing of greenhouse interiors. It is a new field but little explored and offering more opportunity for individual treatment than most people realize.

In the old time "propagating" type with its uniformity and never varying bench line, there was little to excite interest or stimulate imagination. Having a greenhouse attached to a dwelling house until lately consisted chiefly in having an array of large palms, dracenas, crotons, a large rubber plant, oranges or lemons, and some few tropical curiosities. This is being improved upon until the glasshouse becomes an integral part of the living-room and home life. Modern improved metal construction lends itself to architectural manipulation,

Stephanotis floribunda. A tropical climber having waxy white flowers 4-6 inches long, extremely fragrant

and we find many greenhouses are being built into the dwelling house in recent years — varying from a sun room with few plants to the larger structures with a swimming pool and orange trees around!

A welcome break from the conventional type is seen in the greenhouse of Mr. Weber at Stamford, Conn. It is the customary detached house for growing cut flowers, pot plants and seedlings for the spring. The entering view is very pleasant, the roof structure being entirely hidden by nasturtiums, the bench line broken by potted periwinkle (*Vinca major*), and on the floor pots of primroses which give bloom for many months. The potting house end has a cobblestone wall; this, with the vine, makes a background for the



Observe how the commercial type of house is redeemed by having a few vines on the supports

All winter there is a wealth of flowers, and on one corner of the bench propagation of plants can be pushed ahead for spring planting

Clerodendron Thomsonae. A woody vine that is a gorgeous show of scarlet and white

pyramidal pots of gloxinia, calceolaria, and cyclamen. To the right as we pass in is a half barrel let into the bench. Its form is hidden by umbrella plant (Cyperus) and the top partially screened by *Vinca major* on a chicken wire support. Inside are a few aquatic plants and goldfish. This is a feature to attract the children and might be enlarged with pleasing results.

An adjoining house is all carnations, requiring the same temperature as nas-

A greenhouse rockery, in which are found English ivy, ferns, begonias, vinca, and aspidistras

turtiums. Although the vine masses are large the carnations do not show any loss of light. The general appearance of the house is improved by these garlands of leaves and flowers which hide the unpleasant structural lines above the benches.

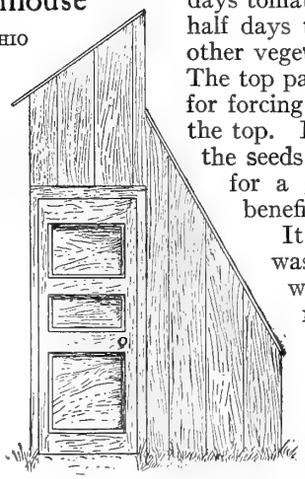
That the walls may be covered without interference is well set forth by other pictures. Clerodendron, with its intensely showy red and white flowers, and Stephanotis, with its highly fragrant waxy blooms, are always attractive. The foliage too is heavy and persistent, and neither plant can be had without the protection of glass. The additional pests introduced by overhead vines are a negligible item compared to the improved appearance and general satisfaction.

Now we may go a step farther. Forget the plant house or propagating house with its severe uniformity. Consider it as a portion of your garden covered with glass wherein you may control temperature, moisture, light, and insects. These are the conditions for growing perfect flowers at all seasons. Your imagination may see the benches removed and their place occupied by cultivated ground on the outdoor level; small benches on the side walls with flowering and foliage vines which hide their support, or creeping plants such as nasturtiums, arabis and candytuft. There may be a winding brick walk so that its continuity will be broken by leaning masses of flowers. Maybe a grass border even, or a small pool, or a brook. The entire roof will not be needed for light. The structural lines may be covered and broken by flowering or evergreen vines on metal support. On a shady side of the house you can place a rock bank and fill it with ferns and begonias. In the photograph shown on the preceding page is a bank with several varieties of ferns, English ivy, varieties of tuberous and fibrous begonias, vinca, aspidistras, smilax and asparagus. These are merely suggestive of many possibilities. Do you like them? Don't you, too, want a greenhouse?

A Miniature Greenhouse

By R. E. Rogers, Ohio

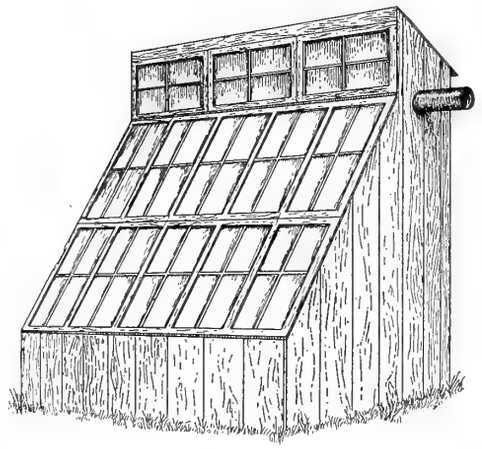
EIGHT by nine by sixteen is the size of one of the most profitable little glass-fronted houses that I have seen for a long while. The maker practically originated the idea himself and did the work of erecting the building alone.



The convenience of a door and a separate heating arrangement make this absolutely practical

In all the work that he does he uses flats that are 20 x 30 in. On the lower tier of flats under the slanting front there is room for a row of nine flats with plenty of space for handling them. The same on the other two rows allows him place for 27 regular flats, all where they can get the sunlight as long as there is any sun shining. Besides this there is a space back of these three rows where several other flats may be placed though not in the sunshine. However, the sun's heat in the building will keep the temperature so that by changing the rear flats at times, all may be kept growing in good shape.

For extra heat in cold weather there is an old stove of the drum type which is located at one end of the house, while the stove pipe extends entirely across the house and out at the opposite end. Soft coal and wood are used. A temperature that is too high is easily reached so that the place has to be watched. The front or slanting glass is slipped into a groove at the back; this acts as a water table and yet allows the frame to be raised to any height for ventilation. The slanting front is made of five sections each three feet wide. The two-by-fours that support these sash in the front make up the extra foot of space so that the five sashes fill the sixteen feet.



This makeshift sort of greenhouse, or enlarged hotbed, enables the grower to force quantities of early seedlings for planting out

Lettuce can be brought through the ground in 48 hours in this house. In four days tomatoes are up. It takes one and a half days to produce cabbage plants, and other vegetables are correspondingly quick. The top part of the house is the best place for forcing seeds since the warm air is at the top. By changing the flats as soon as the seeds have sprouted there is a chance for a great many flats to have the benefit of the warmest location.

It so happened that an old factory was torn down just before this house was built so that the sash bill was much smaller than it would otherwise have been. The lumber was of ordinary matched stuff and the other costs were only for a frame, hinges, lock, roofing, and flats.

With a small town close by and flowers and fruit, as well as vegetables, in the house, a nice profit is realized.

The Economy of a Hotbed

By Mary W. Porter, New Hampshire

OUR first hotbed was a bottomless dry goods box sunk in the ground and covered with a discarded window sash. It wasn't much but in it we started more than five hundred plants for our garden. Then, when we had a farm, we rummaged in the garret and found four old sashes. We made a rough frame and had reasonable success in getting our plants started.

For the real one that we had the next year we hired a carpenter to build the frame and bought five sashes to cover it. They make a bed fifteen feet long by six feet wide. The glass is double with an air chamber between. Even in this far-north country, where zero weather comes night after night for many a week, our lettuce has lived through an entire winter with no covering save the sash and the blanket of snow. We buy the best seed obtainable.

Our asparagus is for sale early because we have the bed in a particularly warm spot. A cultivation is given about as soon as the frost is out of the ground, thus letting the first spring sunshine warm up the earth around the dormant roots. We get our peas in market early because we buy early seed, and our summer squashes, tomatoes, cauliflower and early cabbage are usually in market long before the native supply.

Tomato plants are our "best sellers," and our supply is usually exhausted several days before the demand ceases. When very small they are transplanted into strawberry boxes, six in a box. A pinch of nitrate of soda, mixed with the earth, starts vigorous growth and makes the foliage a dark green. They are kept in the hotbed in the boxes until large enough to sell. We sold some early cabbage plants set singly in paper pots. Transplanted in this way the roots need not be disturbed.

The original expense of our hotbed was $23.20, itemized as follows:

Sash and glass	$17.40
Frame	2.33
Carpenter work	2.00
Paint and labor	1.50

The income and expenses for the past year have been as follows:

Income			
Plants	Tomato	$10.05	
	Cabbage	3.75	
	Cauliflower	.25	
Vegetables	Tomatoes	4.75	
	Cabbage	.70	
	Cauliflower	36.25	
	Summer squashes	5.25	
			$61.00
Expense			
Manure		$ 2.00	
Labor	Making Bed	1.50	
	Transplanting	1.50	
Seeds		1.05	
			6.05
Net gain			$54.95

To the money gain add the vegetables we have used and the result proves our hotbed both a luxury and an economy.

How I Built A Greenhouse With My House — Earl Brooks, Indiana

IN PLANNING my new home, I was determined to have a small glass addition to the house, in which I could spend a few pleasant hours each winter day with the flowers. Likewise I planned a 10 x 12 ft. room on the south of the library with the 12 foot side next to the library. Inasmuch as this was my only chance for light in the library I planned two sliding glass doors as an opening between the two rooms. After considerable figuring and planning I decided to build my own greenhouse but I have no doubt that a house put up by a specialist in that business would be well worth the extra money for one who can afford it.

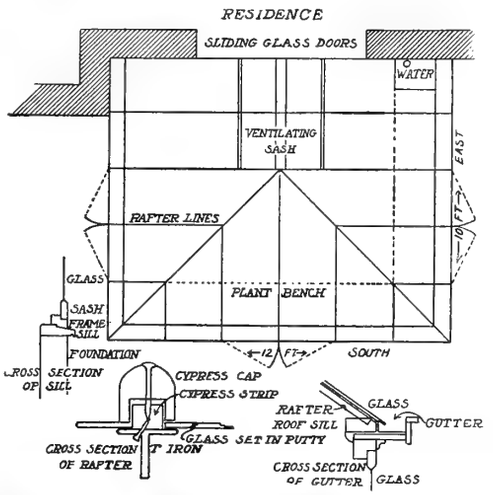
The walls are built up of brick similar to the brick in the foundation of the house and are finished on the inside with facing brick the same as on the outside, to a height of thirty inches above the floor. On this foundation rests a cypress sill and on the sill rests the frame which holds the side sash. A contract was let to a local planing mill to construct these frames, one for each of the three sides, the sash, glass, sill and the finish above the frames to the roof plate. Then came the roof, which was the really difficult part as there were no local men who had any experience in this line and none who cared to take a contract for it. I hired a general mechanic to build it at the mill and with the assistance of the blacksmith, the wood worker and myself, succeeded in getting the roof frame ready for the glass. It was then taken apart and brought in sections and placed on the side frames already constructed. As the sides and the roof frame was left in sections it only required one day's labor for two men to erect it from the foundation ready for the roof glass. For the roof glass we used ribbed wire glass and obtained it in pieces long enough so that a single pane is used from the eave to the top, thus avoiding overlapping joints.

There are two ventilating sash in the roof which I wanted to control from below, but owing to the two doors being directly underneath, I could not use any of the machines on the market without an alteration. I used a Little Giant machine having a machinist remove the sprockets and turn a cylindrical wheel with flanges on the side, substituting it in place of the sprocket around which a cable is wrapped. This new piece secured in the centre by a pin to prevent slipping, wraps on one side as it unwraps on the other. By this cable and a series of pullies we are able to raise both sash at once or close them. A small turnbuckle in the cable keeps it taut.

The heat is supplied by three hot water radiators connected to the house plant. The floor is covered with green encaustic tile.

The rafters are one and one-half inch T-iron. All woodwork is of Southern cypress. Both iron and wood work have three coats of white lead paint. The roof glass, of ribbed wire glass, is one fourth inch thick and practically indestructible. The ribbing gives it a frosted appearance.

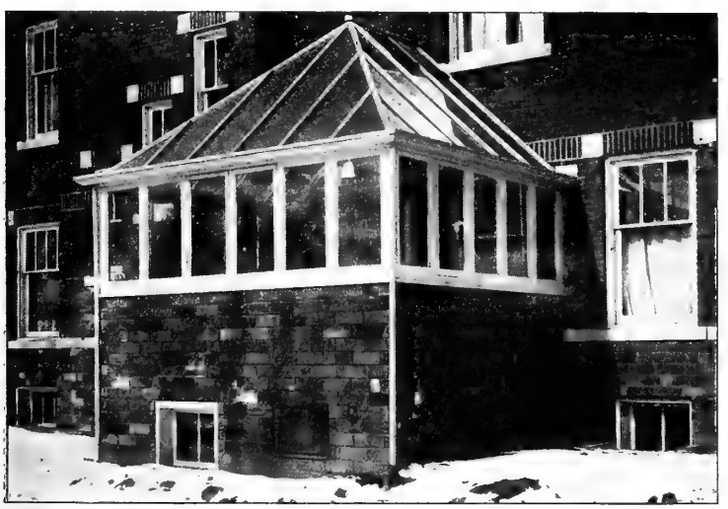
Part of the practical conveniences — water supply and the cupboard under the bench for tools, pots and sundries



COST OF CONSTRUCTION

Contract for sides to the roof plate	$ 51.00
Labor and material on roof frame and ten screens	31.60
Labor for construction (two men, one day)	6.50
Roof Glass, cutting, and glazing	33.00
Tinning, old style redipped charcoal iron tin	12.50
Painting, three coats white lead	12.25
Ventilating apparatus (installed myself)	5.75
Tile floor (not including timber supports)	59.35
Plumbing for water	5.50
Two benches and cupboard for accessories	7.25
Total	$224.70

This greenhouse is stocked with a general collection of plants including begonias, palms, ferns, geraniums, lilies and spring blooming bulbs etc. Last winter we also raised 150 pots of hyacinths and narcissus.



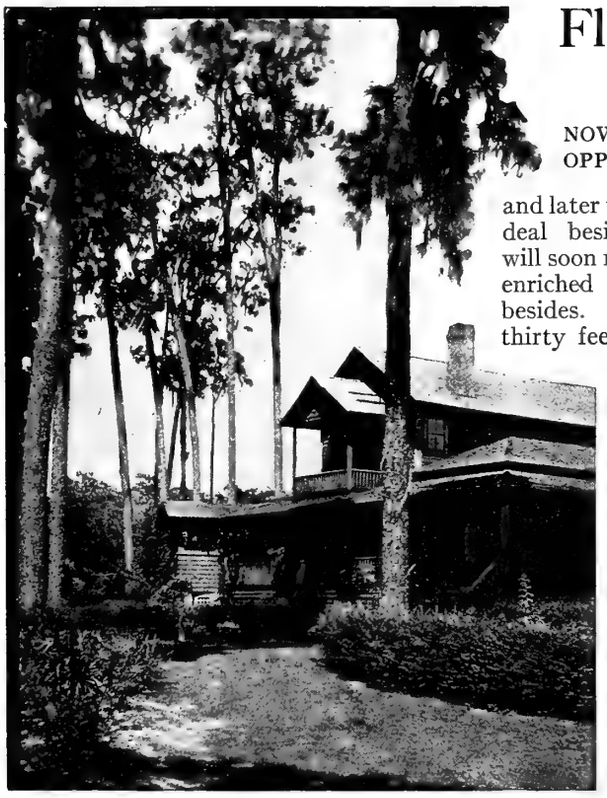
As the conservatory looks from the outside

Looking into it from the library

Flowering Shrubs For Florida Gardens

By E. P. Powell, Sorrento Fla.

NOW IS THE PLANTING SEASON FOR THIS FLOWERY SOUTHLAND—OPPORTUNITIES FOR MAKING THE WINTER HOME A GARDEN OF BEAUTY



Florida gardens may be planted with shrubbery at this time of the year and will give flowers immediately

IN FLORIDA shrubs never get tired of blossoming, and some of them, like the redbud, are not satisfied without blossoming two or three times consecutively. The crêpe myrtle will not stop short of continuous bloom for three or four months in a year. The hibiscus obeys no stop orders short of a couple of frosts; and they must be hard ones at that.

Most of the Florida shrubs begin to blossom when not more than a foot high, and then, like the magnificent sage tree, a huge shrub, they are nearly all the time in flower, until they are fifteen or twenty feet high. They have the advantage of long seasons, and almost no winter — hardly enough to give them a rest. That is the peculiarity of these Florida bushes, — they rarely do go to sleep. Oranges lose their calendar, and are likely to break out into blossom at any time, or all of the time. Plums are liable to set fruit in January, or in June, as likely as to adhere to their regular season, which is March.

Very few of our shrubs will do well before there have been two or three years of soil-making. This is owing to the fact that Florida has been burned over annually for more than a hundred years, and the deposit of humus, which naturally would be very great, has been prevented, except in the hollows and the lake edges. The task is, however, not so very great, when we remember that the cow pea will grow from ten to fifteen feet in three months, and the velvet bean will grow sixty feet in about the same time. This permits us to mow one or two crops of hay from either of these legumes, and later plow under the stubble and a good deal besides. These nitrogen gatherers will soon make a splendid deposit of humus, enriched with nitrogen and not a little besides. Florida has a lime deposit, mostly thirty feet below the sandy surface. We buy our lime here by the car load, and apply it freely.

I am not particular where I plant my shrubs, for if decently fed they will prove responsive everywhere. Plant nearly every thing when the leaves are off, for really there is a winter (that is, a period of rest) here just as there is in the North. It is shorter, and ventures only to finger frost two or three times in midwinter; but deciduous leaves do fall; and they should all be raked into compost piles and saved. Weeds should not be allowed to dry up, but at all times piled up. You can plant nearly everything from about the last of October until March, even oranges and figs and other semi-tropicals, which makes it quite possible for the winter tourist from the North to plant out shrubs after he comes down, say in this present month. But I often find it convenient to move shrubs at other seasons, skipping only the very hottest weather of June and July. As summer is our rainy season a shrub is likely to be kept well soaked after moving.

If I were to select a half dozen of what might be called absolutely wonderful shrubs I should begin with one very common at the North, and known as redbud. There it blossoms about the last of April. Here in Florida it is a January shrub, and if properly trained, becomes a small tree. We find it on the river bottoms and marshy lake edges, but it is of very little importance until transferred to our lawns.

It takes some little time to adjust its root formation to cultivation; as does everything else here. That is if you want a shrub or tree to thrive in this soil and climate you must give it plenty of time, and then you must first of all help it to make a big underground development before you urge a large limb growth. If you force the upper part of the plant to develop too rapidly, you are liable some hot day to find the rootlets unable to keep pace. This is so with oranges as well as with strictly flowering bushes, which makes mulching all important. At any rate do not worry if your new plants do not grow rapidly; only make sure their roots are growing.

Your red bud must have nursing and watering and mulching for three or four years, and then it becomes a mass of bloom twenty feet in diameter and fifteen in height. What is more, it will hardly close its first blooming (which like that at the North is before any leafage) when a second development of blossoms takes place, as full as the first. During this time the small rich leaves are forming, and all up and down the body and large limbs there are little fresh shoots. When the second bloom is just dropping, all over these body shoots comes a third set of buds and I am inclined to think this is the most beautiful bloom of all. I am somewhat enthusiastic over this marvelous American bush. In the North it reaches up superbly, and blooms profusely; but here every limb droops, with a fine sweep of weeping.

The hawthorn I place next; not only for its sweetness of bloom, but because its drooping propensity is exquisitely graceful. It needs somebody around, with a knife and good trimming sense, to make something very fine of this tree. To add to the value put a few grafts of Northern apples into the middle of the top. I do not say that these will always bear fruit, but if you try the King David or Henry Clay or Red Astrachan, you are pretty likely to get returns, provided the tree is well mulched, and the root system is first well developed. The hawthorn is found wild here, everywhere about the pine woods and by the street sides. The fragrance very much surpasses that of the Northern sorts.

I like the elderberry of the North so much that I am delighted to find it very

The redbud (Cercis) is a continuous bloom in the south, but takes a little time to become established

plentiful here in the South. It is just what is it in New York and New England. I have a big one hanging over my water trough, where my horse drinks, and it revels in the puddle. The blossoms come continuously in great trusses, pure white; while the new stems are as busy as bees getting ready for more flowers.

The hibiscus, in its herbaceous form, has its representatives in our Northern gardens, but in its shrubby forms it is the glory of Florida. Going below the frost line, we find it in blossom every month of the year. The blossoms, however, last only a single day, but the buds are multitudinous enough to give a daily supply. When the bush is only a foot high it begins to bloom but when it has reached twelve feet, with a diameter of eight, it is a scarlet glory. However the colors are by no means confined to shades of red, there are white, and crimson and salmon, with buff; and there are not less than twenty catalogued sorts — some of them with flowers six or eight inches across. Used either for hedges, or as single specimens on the lawns, nothing can surpass this shrub in semi-tropical Florida, unless it be the oleander.

Most people know the oleander only in its double red and single white varieties. These are grown liberally in the North; where they require house room during the winter. With care not to be over-watered they can be stored in a cellar. But here in Florida the oleander opens its heart to us very early in the spring, generally March, and most of the varieties give us nearly perpetual bloom until late in the autumn. I am now growing thirteen varieties, one of them with richly variegated leaves and pink flowers. The leaves are broad, and the white borders are conspicuously rich. A pink-flowered variety gives us a very rich shade, and is very rare. The oleander is poisonous; do not plant it where hungry horses or cattle may nibble it. It is not easy to transplant large bushes.

Once in my life I saw a large shrub, it might be called a small tree, covered with blue flowers, in spikes six inches long. It was called by the growers the sage tree. It haunted my desire, until after searching all the catalogues, I found it at last in that of the late Mr. T. V. Munson, the grape king at Denison, Texas; under the name of *Vitex agnus-castus*, var. *incisa*, or "mint tree" — described as perpetual-flowering, and producing innumerable "spikes of rich blue, highly scented, mint like flowers, much liked by bees." The leaves are divided like a hand into five or seven finger-like leaflets. There is also a white colored sort, with the same characteristics, of profuse bloom and delicious odor. The whole foliage has the fragrance of a mint bed or sage. It begins to blossom when not more than three feet high, and profusely continues the habit until we have almost a tree. I do not know anything finer for our shrubberies. It is entirely hardy in Florida and with all its uniqueness and attractiveness and wholesomeness, it is for some reason very rare. I find it quite easy to propagate.

The flowers of the common elder bush take on a new glory as a foil for the brighter colors of other flowers.

Nothing excels the gorgeous bloom of the hibiscus. It lasts only a single day, but is always in flower

After all I am not quite willing to refuse to place at the head of the whole list a remarkable plant, the crêpe myrtle, *Lagerstroemia Indica*. It is indeed the lilac of the South in effect. There are three colors that I am planting, with slight variations in the shade of the crimson: the pink and the white seem to be established colors. They are equally profuse in bloom, beginning about July first and continuing until October. The flowers come on new stems, which are continuously developing all over the bush. They are huge bunches of very delicately laciniated individual flowers. A Northerner will have his heart captured at once.

Of course we shall plant largely of citrus shrubs, for they can be grown as shrubs; indeed all young orange orchards, if rightly trimmed, look very much like shrubberies — while the grape fruit rarely grows beyond large shrub size, that is eight or ten feet in diameter. It has also developed very largely the spreading type, while most of the oranges are more erect and stiff. For ornament these shrubs or trees have the great advantage that they are in bloom through March, and frequent-

ly give us a second bloom in June; while the fruit is unsurpassably beautiful from the first of September until the picking is finished in March. The loquat is another of our semi-tropical bushes, and if grown in pyramid style looks very much like cypress, only that the leaves are elm-like and coarse. Flowers are put out very freely through August and September, and from that time on, continuously until fruit sets in January, to be ripened in February and March. We are lengthening the season of this fruit very much. As a fruit it is the very climax of Florida treasures, while the small trees or bushes are very beautiful.

This leaves out the lilacs I am sorry to say. The mock oranges do very little better, and I have not yet found a spirea of essential value in this State. Some of them will bloom indifferently well, but lack entirely the attraction which they offer in the North. The weigela does somewhat better, but I have never seen it in perfection in Florida. Roses of course are nowhere else any more at home than among the lakes and hills of central Florida. It is a rare week in any year, or any part of a year, that we cannot pick an armful of Marechal Niel, Etoile de France or a dozen other of the choicest, like Liberty and Gen. McArthur. Over our verandas run with marvelous profusion of bloom,Gainsboro and climbing Wootton. A splendid specimen of the old but delicious Baltimore Belle covers my cow shed.

Climbing bushes are by no means confined however to roses. The glory of this section is the orange trumpet vine, *Bignonia venusta*. Even if frozen down (and it is very tender) it will climb seventy feet in a season, and swing, with a kind of defiance, its great trusses of orange colored flowers over trees and balconies. *Bignonia radicans* or the common trumpet creeper, is equally at home under a tropical sun, but it is not to be compared with its cousin. The wisterias both purple and white are happy here, blooming profusely after they are well grown, and marvelously beautiful when twined together with honeysuckles. With these we must of course have the jessamines, which cover the whole side of a house with star-like flowers.

However, there is one climber that is so noble, in vine and in flower, that it excuses the utmost extravagance of language. I refer to the alamanda. There is one sort that constitutes a medium sized bush, but it does not offer us inferior flowers. The vine completely covers a whole veranda. I am accustomed to mix with it the edible passion vine, for they blend together finely. The alamanda and the passion vine together completely hide the house. The flowers are precisely the same in bush and vine — that is are purest gold, just touched with chocolate in the bud, and each blossom is as large as a man's fist, rolling open in great-lipped petals that unite in an unbroken calyx. The whole vine is covered every day, from April until November; and not seldom the alamanda will not miss a single day through the winter. Right out of this wealth of foliage, we are at the same time picking delicious fruits from the passion vine. I do not know anything finer, not even in the vineyards full of Niagaras, Brightons and Herberts; and yet Florida can cover its trellises and arbors and homes with hothouse grapes quite as well as with alamandas.

The magnificence of a shrubbery in Florida is that it is doing its best when our Northern lawns are under the snow. We have, in fact, but one really gay shrub month in our Northern States. That is May, supplemented by hydrangeas and altheas in August. In Florida roses are more likely to be in full bloom in January than in June, and there is not a single month in the year which is not full of blossom, unless a drought is displacing good order and drying the life out of plants and men. However, irrigation is a simple matter here, and water is plenty in lakes, that fill every hollow of central Florida.

The oleander is known in many shades of pink and in white. It is equally at home in Florida as it is in Galveston, where this photograph was made. The shrub is in bloom all summer

The Garden Doctor

Concluded from page 152, November number

Chapter XXII

BUT CLARKY would insist that cows were an essential part of rural life. "No well equipped farm could exist without them, and did I not think the Holstein-Friesian a better all-round cow than the Jersey, which was too liable to tuberculosis?" Clarky had gotten amazingly interested in farming and live-stock; she even proposed hens — for next year. She seemed to have lost interest in my garden now that the manual training stage had passed and the carpenter work was lacking. But all along she had rather regarded it as a safe amusement and a hygienic one rather than the serious work it was. She woke up a little when Richard Protheroe sent a box of bulbs, and showed me how to plant them properly and set each on a cushion of sand.

"It prevents a kind of rheumatism," said she.

We planted Darwin tulips and, down below the old roses, poet's narcissus; and, thick in the grass under the apple trees and beside the doorstep and at the foot of the big lilac, crocuses and snowdrops. These might bloom, I knew, before I could come back, but they would keep the little house company until the lilac bush broke into bloom.

We had delightful evenings, clear and cool, with the crackling fire indoors for company and the chirping of the crickets outside. Sometimes we would be off on the hills and not come back until long after the dusk had fallen and the moon came up past the pines and made the familiar path wonderful with a strange, unreal beauty.

But Clarky was too full of rural problems to take these loafing rambles restfully enough. She wanted to reform the old orchards that we passed and, in her mind, stopped and pruned them so that they should bear fruit and be useful instead of abandoning themselves to the busy, restless swarm of insect life and bird life that to me they seemed contentedly mothering. Clarky talked rural sanitation and instruction in cooking and nursing and handicraft — useful indeed, I admit, but too stimulating — and I had grown in love with loafing. Besides, had I not a right? Was I not a sure-enough invalid perfectly entitled to months of convalescence? I had had the discomforts of illness, now I proposed to have the joys, whereof an almost infantine freedom from a sense of responsibility is the chief.

So I let Clarky write her plans of parish reform to Richard Protheroe and I went up the hill with Stephen to fetch pine-needles for my garden's winter bedding, and we brought down cones for the fireplace; all of which was eminently useful, quite as useful, to my mind, as arranging the lives and digestions for a community who really seemed quite content without such aid.

Stephen, apparently, had another attack of pressing business up the hill, like the one which sent him logging in the spring just when the hill was loveliest. We would go up the hill with the horses, then leave them, and walk across through the woods. I had gotten stronger by now, and could walk mile after mile through the golden woods, if I had the "lift" up the hill. Stephen was painting a bit of the forest he loved with a color and feeling which it seemed should make the beauty of it visible to any but the blind.

It was now October, and the gold and purple had left the open and withdrawn to the hills; the woods were all golden, clear and still, the air fine and sharp and went to one's head like wine; the leaves were crisp underfoot and the feathery young hemlocks seemed awake and alive as never before.

In my forest, the level beechwoods where the thrushes lived, was a carpet of coppery beech leaves, and high overhead a few dark pines mingled their tops with the slow, dull, magnificent crimson of the great oak trees.

In October Madame Nature seems to take a wicked, mischievous delight in trying to stir the senses of the New Englander with a sudden, almost shameless flaunting of her gorgeous beauty — up and down his hills, round and about, under his feet and over his head, as if she were trying to wake a bit of passion for herself in his chill and unresponsive breast. But for the most part, he remains a very St. Anthony!

Stephen McLeod and I made long excursions through the woods, walking mile after mile in a silence that was broken only by the crackling of twigs underfoot — under my foot usually, for Stephen walked with the silence and sureness of an Indian. Again and again we would come on one of those wonderful garden spots, odd little sheltered places, curiously warm, where the summer lingers as if by enchantment — now a rock side with moss as green and dripping as if it were May and the courageous little herb Robert snatching a scant foothold and blossoming as if there had been no such thing as frost to turn the goldenrod to ashes and snap the maple leaves. Sometimes we came so close to a partridge that I could see its markings as plainly as if it had been a barnyard fowl, and the quick, sensitive head, which never a barnyard fowl possesses and makes one wonder if domestication had really improved — except in the matter of flesh.

Then we would have a Robinson Crusoe luncheon of beechnuts and some curious flat pine kernels and coffee made over an incredibly small fire that was carefully extinguished before we "broke camp."

Then down the hill we would come, the wagon piled with bags of needles and cones for the fire, facing a sunset that flamed crimson through the dark pine trunks.

Often Stephen would stay for supper, sit and smoke by the fire with the kitten curled on his knee and Clarky, being industrious, would sew. She was making some big nurse's aprons. I suppose, if I had been a creditable specimen of womankind I would have sewed also, but I had watched the cows too long. Besides, no one can loaf like an active person who once gets the habit, and I was recovering from the vice of over-industry.

Sometimes Stephen would pull a book out of his pocket and read. Keats or Shelley he would be likely to have in the big pocket of that canvas coat or some of "Paradise Lost." He liked the grandeur of the slow-moving lines, very much as he liked his mountain. But he never read any of these to Clarky. I think the rural sanitation alarmed him for his favorites, although Shelley, surely, would have been interested in the subject. Instead, he read John Woolman, that curiously practical idealist, or else the charming "Letters of an American Farmer," an out-of-print, before-the-Revolution book. It was easy to understand why he liked it, for Hector St. John de Crevecœur must have been a farmer after Stephen's own heart, with his keen sense of the color and beauty and his care, not only to feed the quail, but to strew chaff, on winter mornings, that their feet might not become chilled while breakfasting.

The wild pigeon, which, in Crevecœur's time, were evidently as abundant as English sparrows in town, have disappeared completely. What a pity we must always bring a trail of slaughter and destruction!

Stephen holds with John Woolman that we must take care "not to diminish the sweetness of life to any living creature."

CHAPTER XXIII

So went October and November, the days unhurried and wonderful, but the weeks rushed by (according to the calendar) with a startling rapidity. The woods were no longer golden, but brown; the birds had gone, the summer resident birds; the deer mice were busy making over their nests into winter homes for themselves; the squirrels were terribly industrious, busy and chattering over their nut getting. They had evidently played all summer, and this was the serious business of the year.

I was ready for the winter, too. My garden was snugly covered. Hollyhocks and all the others were carefully blanketed with the pine needles, with evergreen boughs laid on top to keep them in place.

There was scant excuse for staying longer in the little house — it was undeniably cold in the mornings — but still we lingered. Clarky was getting restless. She had loafed all the "loaf" that was in her and she wanted to get to work on a real case. Besides, Richard Protheroe kept writing to her volumes on rural sanitation in its relation to the ministry, and up-to-date orcharding; and he wanted, so she said, to advise with her how best he could make the old parsonage beside his flowery orchard into a model of sanitary excellence and modern improvement. "Tell him to live in the orchard!" Stephen said, "It's much pleasanter." I thought Clarky rather disproportionately interested in that parsonage.

At last she began to pack. I went and sat on the doorstep disconsolately. I had on the same lumberman's leggings and moccasins that Clarky had got for me at first, for the cold was unmistakable and already we had had little flurries of snow. I heard Clarky pulling and hauling trunks about and really enjoying the activity.

I sat there in the November sunshine, warm, if it was a bit reluctant, and looked about. The hill stretched brown and rather disconsolate, also; the grass was dead; never a woodchuck sat at his house door for every one of them had been a month or more in his warm burrow, spending the winter season in the underworld like a furry Proserpina. The big gray squirrel was scolding and chattering in the woodshed. He wanted us to go; I know he intended to establish himself in the attic the second we were out of the house. Our redheaded woodpecker was tapping busily; he had no intention of going away and didn't care in the least whether we stayed or went.

Suddenly Stephen appeared. "You are really going?" he asked.

I nodded. "Clarky's packing, don't you hear her?" I said, for within the house a trunk lid fell with a bang.

Stephen's face clouded, then it cleared suddenly. "But *you* aren't packing," he said. "There's a wonderful little place over in the pasture yonder," he pointed south over the wide, grassed stretch, "that has forgotten the time of year. Won't you come? I want to show it to you."

The sky cleared for me, also, as we went over the brown grassed road, past the barns, past the red gate and into the pasture that was brown and bare as the leafless maple trees, except for the scattering of seedling pines, the ashen tops of dead goldenrod and the stiff brown spear heads of the spirea. Instead of going up the hill, he led the way down to a little circular group of young pines standing close together in a tiny amphitheatre. Once within the enclosure and November had vanished! The ground was level; the red-brown of the pine needles was threaded with ground pine and soft with moss, and over it all and through it all was the little herb Robert, the tiny rose colored blossoms as gayly erect as if there were no such thing as frost.

I sat down on the moss and took some of the dear little flowers between my fingers, but I didn't break them. They were such courageous little things, they must live as long as they could. Stephen stood looking at the river in silence. Then he came and sat beside me. The clouds were over the mountain and turned its purple into a dull violet. The winding river, far below us looked dark and sullen.

"Must you go?" he asked.

"I'm afraid so," I answered.

"The woods are wonderful here in the winter," he said. The stillness of them and the whiteness of them; and you go through early in the morning after a snowfall before even the squirrels have dug out their houses. And the color! Such reds in the pine trunks and such vividness in the hemlocks. They seem aloof in the summer and half awake, but they are wonderfully alive then. They talk to you."

"I wish I could see it," I said.

"I suppose it calls you, the other life," Stephen said slowly.

"It doesn't call me. But there are things I must do, now I'm well. And there are people ——"

"Once, last year, when I was over at your place," he said irrelevantly, "a deer had been killed by your apple-tree; there was blood on the snow. And in March I found eighteen or twenty little fox sparrows dead from cold and hunger in your woods, they had come too early. Neither of those things would have happened had you been here! Are there people who so greatly need you?"

I thought of Aunt Cassandra, who held a little oversight of me necessary as an unwelcome chore, and of my brother Rod vastly occupied with his engagement. "There's no one in such urgent need," I said, "but I ought to go."

"You've been happy in this life?" he said, hesitatingly.

"Very. I never was really happy before."

He hesitated a moment. Then he turned to me with a sudden directness, and the shyness dropped, as it always did when he spoke what he felt. "I have waited for you all my life," he said, "why didn't you come before."

"I did not know ——" I said. And then I looked at him and before the light in his face my eyes fell, but I felt something strange and wonderful wake in me — as wonderful as it must be to the maples when the frost lets go and the sap rushes through every vein to waken it. And then ——

But I shall not write what was said then. That belongs to Stephen, and to me, and to the darling little flowers that looked up at us both — wondering and sympathetic. But the pines stood aloof. They had heard that story before; it was old to them and the hill. Life and love, and birth and death, the old mystery and the old sweetness, and the very houses that had sheltered them were gone but the hills and pines still stood.

It was dusk before we turned our faces homeward.

"This one winter I must go back," I said, in answer to Stephen's question.

"But in the spring, very early in the spring ——?" he urged.

"In the spring," I said.

"Before the scarlet maples and the blood root?" he insisted. "You must see them with me, and the spring must come for us, too."

"Before the scarlet maples and the bloodroot," I assented. "We can be up at the little house together."

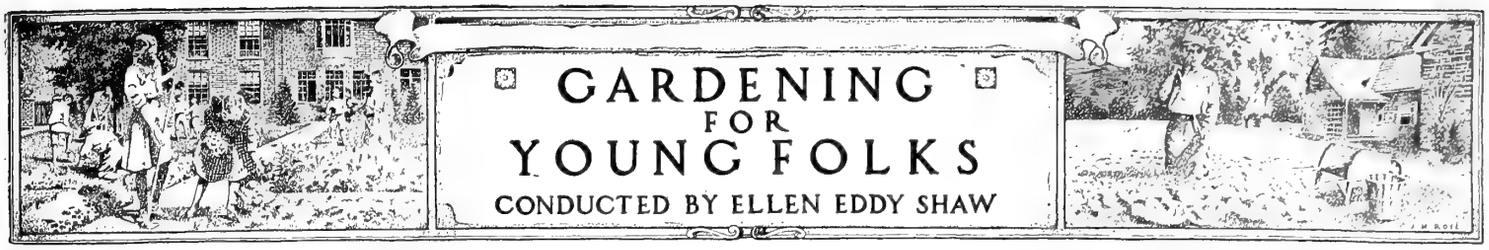
"I know now why I so loved your little place," said Stephen, abruptly.

It is now the middle of December. Clarky and I have been three weeks back from the little house. I've been sitting at my window in the old room, where I used to sit when I was ill, looking over the journal I tried to keep of the summer's adventure. Clarky is off on a beautiful surgical case. Down in the yard next door Uncle Hermann is covering his rose bushes with straw. He has on the same short, thick jacket that makes him look rounder than ever, and the pockets are still bulging with string and shears as in February when he began pruning the vines and set me off agardening.

Ah, Uncle Hermann! Where should I be now if you hadn't cared about your roses and pruned them so assiduously? Still as limp and useless as a seedling with a cutworm at its root? I wonder. But your roses are going to wake up in the spring and I shall be very wide awake in the spring. Stephen and I are going to see it together, from the first flush until the leaves are out.

But it seems a bit long to wait for the scarlet maples.

(THE END)



Christmas All The Year Round

THE TRUE STORY OF ROGER NEWTON PERRY, OF WORCESTER, MASS.

(EDITOR'S NOTE — *The following story shows what a boy can do with his garden even when he is physically handicapped. Roger has never been to school an entire year in his life. He has dug health, his life work, and a greenhouse, right out of his backyard. We feel that this story in spirit typifies Christmas. It is printed with a Merry Christmas to all our young readers, and with a wish for them to go and do likewise.*)

The Year of 1902

"Hello, Nellie. I'm so glad to get home. I know you were very homesick without me. Oh, here are my beets, and my squashes, and my cucumbers. Didn't they grow while I was away!

"What good times we've had all summer in my garden, but this morning when I went into it everything was dead. The cook told me Jack Frost did it. I hate him 'cause he made my garden die. When I cried about it, cook said 'I've bought all your vegetables this summer. Now count your pennies and see how much you have made.' I opened my safe and counted two hundred and fifty. Ain't I rich? It's most a millun, I bet, and I'm only eight years old.

"Papa, to-morrow is Christmas, you know, and I want something very, very badly, too. Can I have all the land I want for Christmas?"

"Yes, all you want."

The Year of 1903

"It seems, though, I can't hardly wait for March to come. I'll be nine then and besides the snow will be gone and I can have my garden again.

"Come on, Nellie, I'm going to put this string down just as the gardener does. See what it says: twenty-five this way and four this way. This is going to be all my garden, and I'm going to have squash, some beets, some cucumbers and some corn.

"You're a good dog to drive these old toads out of my garden, Nellie. I shooed the bees out too but they chased me and I was 'fraid. We don't want anything but plants in here, do we?

"Oh! dear, seems as though we just get our garden started when Jack Frost comes along as he did last night, but nurse says my garden has to go to sleep and rest just as much as I do and by and by it will be covered with a blanket of leaves and snow to keep it warm. While my garden is sleeping guess I'll count my money. I forgot my birthday money and all are put in together so I can't tell but I know it must be a millun, anyway.

The Year of 1904

"Well, Nellie, it is kind of cold, but Christmas has come and gone, and I guess my garden must be waking up for the blankets are all off. We'd better hurry up and begin our garden again. We'll make it twenty-five this way and ten — fifteen, twenty-nine — no, make it thirty this way.

"Nellie, come here — I've got a secret to tell you. Don't ever tell anybody will you? Promise me, wag your tail, shake hands. That's a good doggie. Now get your ear right tight up to my mouth so I can whisper it real soft. Last night when I was going into my papa's office I heard my papa tell a man this. 'My little boy is very deaf. He can't see — only a little with one eye. His joints are grown out with rheumatism. The doctor says keep him out of doors in the dirt. Yes, he's all we've got. He's been this way since he was five years old. No! no hope for him, whatever, only from day to day. Should he live he'll never be able to earn a dollar in his life.' Nellie, do you s'pose my papa meant me? I'm all the little boy he's got. He looks so sad all the time. Don't you s'pose I see like other little boys? I can see you now. I can see my papa when he is tight up to me. I can see my plants if I crawl on my hands and knees and they are grown big enough. I can use a trowel to hoe them with even if my wrists

Roger's first means of transportation

are too sore and lame to use my hoe. I know I dig up the plants because I can't see the weeds from the plants until they get awful big but haven't I got my garden, and don't I love it? I've got you too. I've got my potatoes, my cabbage, my tomatoes, my peas, my corn, my beets.

"What did you do then, chase a toad out? No, Nellie, you mustn't do it this year. A man told me a story how they eat up the bugs that would eat my plants, so I'm going to let them live in here with us too and I'm not going to chase the bees out either. He said they helped me some.

Can you hear that birdie singing? He says cheer up. What makes him say that to us? We're cheered up all the time. We are the happiest folks in the whole world, and isn't my garden almost as big as the whole world? I'm going to ask the cook to pick some of my peas for dinner. I love them but can't pick them cause I can't see them from the leaves — wish they were red.

"Oh, what happened to my garden last night? I guess its gone to sleep again for the winter. It makes me sad. I'd better see how much money I made. Oh! good. I'm ten years old and I've made ten dollars.

"When Christmas comes and some one says 'What do you want for Christmas?' I am going to say, 'The skylight window that was taken out of my room.' Then I'll ask the gardener to help me make a little hotbed of my own just like his."

The Year of 1905

"It has been a week since my hotbed was made, so to-day I can sow lettuce, tomato, and cabbage seed. I'm going to plant peas, corn, carrots, beans, parsley, parsnip and turnip in my garden and in July I'm going to set out some celery plants.

"I've just heard about some prizes given to children down to Horticultural Hall and to-morrow I'm going to take my vegetables down there. I've got a dollar on them. Some one said to me 'Down in Boston they are going to give a prize, too.' Guess I'll try there.

"A reporter has just called up and says I won first prize, five dollars, in Boston on my vegetables. I can't hardly believe it. Now I'll see how much of a Christmas present my garden made me this year. Seventeen dollars and thirty cents! I'll go right up to the bank with it.

"I'm going to ask for a cart for you, Nellie, this year for my Christmas present. Then I'll make a harness and you can help me peddle."

The Year of 1906

"You remember, Nellie, what I asked for last Christmas. Well, I've got it now and here is a little harness for you, too. I'm in such a hurry to start out peddling, I can hardly wait. I'm going to make my hotbed and Mrs. D. wants me to raise some aster plants for her. Guess I'll raise some other flowers, too. Yesterday they told me to bring my parsley up to the State Mutual Restaurant. We will take it up with our cart to-day.

"We've sold lots of things from our cart this summer and I'm glad, for this morning I found the garden all gone. We can't do anything else so let's count what we've done.

"I've taken money at the show here, two first prizes in the Boston shows and I've made thirty dollars and forty-eight cents this year. Now I'm thinking hard what I want for Christmas this year.

"I'll ask Pa to buy more land so I can raise more flowers."

The Year of 1907

"He's bought more land so now I'm going

Showing the evolution in transportation from a market basket to an automobile truck

The greenhouse all ready and doing business during the summer of 1913

to take flowers to the Boston Show, too. It's lots of fun.

"Some mornings I've been hoeing in my garden as early as four o'clock.

"I've won first on my vegetables and first on my flowers again in Boston and now I'll see how much I've made this year. Forty-three dollars and eight cents. I'm going right down street to the bank and put it with the rest of my garden money."

The Year of 1908

"This is the last time I can exhibit here as a child, for I'm fourteen. I thought my garden was all over for this year but here is a letter from the *American Boy* saying they had sent me five dollars for a letter I wrote them about my garden in their garden contest. Let me see now how much goes into the bank from my garden this year. Ninety-two dollars and sixty-five cents. That sounds good to me!

"I'm thinking about something big I want but I won't say anything about it 'till I'm sixteen, but this Christmas I'll ask Pa if I can use one of his driving horses and the big wagon to deliver my things with and you may ride beside me, Nellie. We can go anywhere in the city peddling.

The Year of 1909

"This summer is so dry I'm not making quite so much as I did last summer but as this is the last year I can show in Boston I hope I'll get some money out of it. Yes, I've got a first, a second and third on my flowers, vegetables and bouquets. I'll miss coming to the shows for I probably never can exhibit again unless I do with the grownups.

"What does this letter say?

'Would you like to enter your vegetables in our Garden Contest for children?

THE GARDEN MAGAZINE.'

"Will I? I will, and I'm so happy to exhibit with the children again.

"My folks say, 'You won't win anything; had you better try?'

"Probably I won't but I won't if I don't try.

"I've heard from my exhibit. It says I've won first prize of four books and beside I've made seventy-six dollars and twenty-one cents to put away.

"Christmas again and I'm going to ask for something I've wanted. Pa, can I have some of the money I earn and build a greenhouse?

" 'No, put your money in the bank.'

" 'But I do want a greenhouse so much. If I put part of it in the savings bank can I keep some out for a greenhouse?'

" 'Don't you know it takes lots of money for a greenhouse?'

" 'Yes, but I'll earn the money for it.'

"How are you going to earn enough for a greenhouse?'

" 'I'll work for a florist four months and raise things in my garden too. I'll earn it somehow if you'll let me!'

" 'I can't have you working and getting sick. You are only a boy sixteen years old.'

" 'I know it — wish I was sixty-six, then I could have a greenhouse!'

" 'If you are determined, go ahead. But some money must go into the savings bank. I say this is the wildest adventure I ever heard of.' "

The Years of 1910 and 1911

"I've made fifty-seven dollars and thirty cents in my garden besides what I earned at the florist's. I have a chance to buy a second hand greenhouse 50 x 24 for twenty-five dollars. I'm going to 'adventure' — that is venture and add to it. Pa didn't say anything, did he Nellie, when the truckman unloaded my greenhouse but he looked funny. Now I'll get an estimate on cement walls.

"One hundred and seventy-five dollars. Must be the contractor thinks I really did make a million when I was nine years old. No he won't fool me. I'll dig the boiler cellar and ask Pa's man to help me. I'll buy cement and sand and use the rocks and stone I dig out. I'll be my own contractor.

"We've finished digging the cellar so to-day we'll put up moulds for the walls and pour in cement. Now we've got this done I suppose we'll have to wait a week for the cement to harden. We will build my office 12 x 10 ft. The mason has finished the chimney and now we'll set these 4 x 4 cypress posts in cement. I'll have the carpenter come to square the greenhouse for me as he did my office.

"Pa says it is so cold I can't set the glass, that I must hire a glazier; but my money is all gone and I must pay for everything as I go along. No one seems to want to trust me because I'm a minor.

"Now what shall I do? I think I'll talk with some business man.

He says if I have any money in the savings bank I can borrow at the National Bank letting them keep the savings bank book for security. He says too when my interest is due to be there early and pay promptly.

"Yes, I've got the money and a note. It says Nov. 6, 1911. $200. at 5 per cent. Can I ever pay it? Now for setting up the second hand heater.

"I've worked with the carpenter, glazier, mason; now I'm going to be the steam-fitter's helper. I'm learning lots from these men. The steam-fitter says all is ready for a try out.

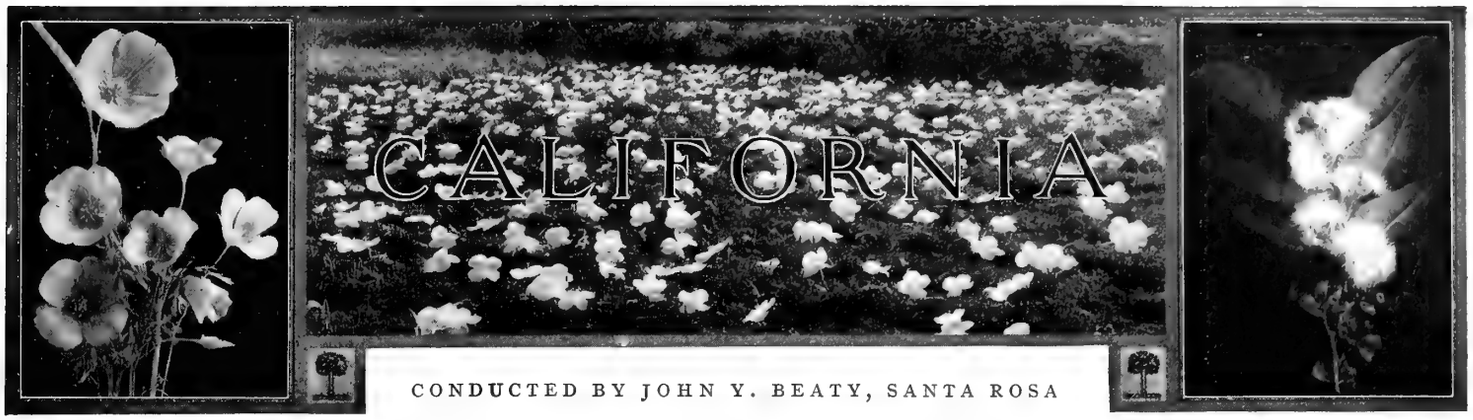
The Year of 1912

"What's that? The heater leaks. It's no good. Can I believe it? Twenty-five dollars gone. I've got to buy a new one and all my plants to stock up with yet.

"Feb. 6: I've got to borrow $200 more. Pa says I'll never pay my debts, and they will be a burden as long as I live.

(*Continued on page* 198)

Notice how every inch in Roger's greenhouse is used to advantage



CONDUCTED BY JOHN Y. BEATY, SANTA ROSA

December Work in the Garden

THIS is the time to prune roses. The Teas and the Hybrid Teas do not need as much pruning as the Hybrid Perpetuals and others. No matter what class of roses you have, however, never allow them to go unpruned. If the roses were planted last year, thin to about three main stems, and cut back each of these about two thirds. If the bushes are older, thin out well, and cut back the branches left to about four buds each. Use pruning shears.

Examine all trees, especially the fruit trees, for the nests of tent caterpillars. The worms make a sort of tent out of a white web and the young are inclosed in this waiting for spring. Burn them, branch, tent, and all, and do it now. Cut off the branch on which the tent is found and don't run any chances of the caterpillars escaping by breaking it.

If the prunes were affected with the red spider or the brown apricot scale, spray them this month with crude oil emulsion. Spray now with lime-sulphur for apples affected with San Jose scale. Or better still, write to your county horticultural commissioner at the county seat and ask him for some of the insects that prey upon this scale. A few of these introduced into your orchard will destroy the scale even better than the spraying.

For peaches affected with blight (or shot hole fungus), spray now with bordeaux mixture.

Daisies, sweet peas, and lily-of-the-valley may be planted during December. Sweet peas planted in the fall should begin to bloom the last of this month; be sure to keep the blossoms picked, for the plant will soon stop blooming if you don't. Plant lettuce, peas, and radish in the vegetable garden rotation. If you have never tried the Chinese White winter radish, it is worth experimenting with. It is a long white variety and may be cooked, when it resembles the turnip. Icicle is another long white variety that has done well here. It has rather a mild flavor, and grows rapidly.

Alaska is a good pea for winter planting but has not been used quite so much as American Wonder. It is a dwarf, quick growing, and does not rot in cold ground. Big Boston is the popular variety of lettuce but Los Angeles (or New York) is worth trying. Some prefer it to Big Boston.

If you have a new lawn to make start it now. Grass seed needs a very rich loam, and if you don't have that, it is much more economical to remove a foot of the top soil and replace it with a rich soil with plenty of humus (leafmold and roots) in it. The seed is very fine, and must have a well made bed. Pulverize the soil thoroughly, and rake the surface and level it carefully before the seed is sown. If there are any spots where stumps of trees have been removed or where the sewer or water pipes have been put in, be sure that the soil has finally settled. If there is anything to lead you to expect more settling, hasten it by running water on the spot. As soon as any sinking takes place, fill in the opening at once and soak again. Keep this up until there is no sign of sinking.

In California, nothing has been found that really equals Kentucky blue grass as an all around lawn variety. Be sure to get the cleaned fresh seed. Pay the best price for the highest quality. If there are any weed seeds mixed with the grass, you are worse than wasting your money. You will have more difficulty in ridding the lawn of the weeds than the entire cost of the seed amounts to.

When the soil is in fine condition, roll it and let it stand for about two weeks. The first crop of weeds will have germinated by that time. Hoe them out, every one, and rake the lawn smooth and sow the seed, one pound to 250 square feet. Select a time for sowing when there is no wind; the seed is so light that a little breeze will scatter the seed unevenly.

As soon as it is sown, roll the entire lawn or gently beat it down. Be very careful that you do not work the seed into bunches, however. Sprinkle twice a day with a spray nozzle unless there is plenty of rain. When the grass comes up well, it will be necessary to sprinkle only once a day. Use plenty of fertilizer. There are odorless brands on the market, which are of course, preferable for a lawn.

If you have any weeping varieties of deciduous trees, prune them now. If they do not have their branches thinned out each winter, they will become an unsightly mass of weak spindling branches.

It is time to begin pruning fruit trees. If you have plums or prunes, cut back the annual growth from one-half to two-thirds.

Cherry trees less than five years old should be thinned out well. Older trees should be pruned only as it is necessary to remove broken or injured limbs, or limbs that are interfering with others.

Apples do not need to be shortened, but there will be a great many surplus shoots and some limbs that interfere with others, that need attention every winter.

Peaches are borne only on wood of the previous year's growth. Remove all the smaller branches or shoots that are about one-eighth inch in diameter. Don't allow the top of the tree to grow out of proportion to the trunk.

The more a pear is cut back, the more it will put its efforts into producing wood. See that the limbs do not get so thick that they tangle, but, other than that, do little pruning.

Remove about half of the new growth of apricots and thin out the branches. The tree must not be allowed to become thick and bushy.

Almond trees less than three years old should be headed back and pruned to make the tree develop into a shapely form. Trees older than that need no pruning except to remove a broken branch or one that is interfering with another.

Stubs left in pruning fig trees are very undesirable. Cut out the limb entirely, or cut it back to a good strong lateral branch. The fig needs little pruning after it is once trained to a desirable shape.

If your walnuts were frozen or blighted last season, prune off the blackened portions. If you do not remove all the dead wood, there is danger of the branch dying back a considerable distance. Other than this, walnut trees need pruning only to give them a good shape and to remove broken or interfering limbs.

Orange trees are naturally of a good shape and as a rule need very little pruning. If any branches develop a weeping habit, remove them. The same applies to the lemon and pomelo.

No pruning is required as a rule for chestnut, persimmon, pomegranate, or quince.

Suggestions for Deciduous Planting

DECIDUOUS trees and shrubs should be planted in California some time between January and April with early planting to be preferred. Do not put in a tree here and a shrub there without carefully considering its value in making a picture, however. California homes are largely surrounded by an unbalanced conglomeration of this and that without any regard at all to the general effect.

Our wonderful climate loses half its value if we live in what is almost as bad as a tangled underbrush.

In planting trees and shrubs, you must use your imagination. It is more difficult than composing a picture on paper because on paper you can see each part of the picture as it will remain, but trees grow and change as they age. An arrangement that makes a picture to-day, may be entirely out of balance in five years.

It is necessary first to see for yourself the plants full-grown that you propose to use. Then with these in mind, work out your outline, and then fill in the details — with very, very few details. Never make the main idea in planting the securing of a certain tree — always buy a tree to fill a definite need.

One of the things most sadly neglected is the large open lawn. There is a well kept lawn here and there, but usually it is cut up in a dozen or more places with flower beds and shrubs and trees. Where there is grass between trees and shrubs, it is used as a part of the picture made by the shrubbery. The large plants are the main objects there, the grass is a filler.

I saw a home garden recently where there were planted not less than thirty varieties of shrubs on an area about fifteen feet wide and fifty feet long. So far as I could determine no two of those shrubs were alike. All were different in habit of growth, in color and style of foliage, and in color and size of blossoms. The result was — hash! What is *your* garden and lawn?

I believe the trouble with most home makers is that they do not buy enough plants of one kind. There are some sorts, of course, that make an attractive showing when a single plant is used, but there are very few cases indeed, where such plants serve the purpose when they are crowded in with a lot of other plants.

Here is a list of several deciduous trees suitable for street planting. Don't select one of each of five different kinds for your front terrace, however. Furthermore, don't select a variety that is almost the opposite of the trees in front of your neighbors' houses. There is no place where coöperation is more productive of results in planting than in planting the street trees.

STREET TREES FOR CALIFORNIA

Montpellier maple (*Acer monspessulanum*), a 25-foot, round-headed tree that thrives on poor soils; box elder (*Acer Negundo*), a 70-foot tree that grows rapidly; Norway maple (*Acer platanoides*), a compact grower that attains a height of 100 feet and is especially adapted to the interior valleys; silver or soft maple (*Acer dasycarpum*), a rapid grower attaining 120 feet; red-flowering horse chestnut (*Aesculus carnea*), a 75-foot tree with deep red flowers May; European white birch (*Betula alba*), an 80-foot tree with white bark; paper mulberry (*Broussonetia papyrifera*) grows to thirty or fifty feet and thrives near factories where smoke and gases kill other vegetation; Japanese locust (*Gleditschia Japonica*), fifty or sixty feet; Texas umbrella tree (*Melia Azedarach*, var. *umbraculiformis*), a very compact tree, giving a dense shade, especially suited to narrow streets; pin oak (*Quercus palustris*), forty or fifty feet tall, beautiful in fall when the leaves turn to a rich scarlet; American linden or basswood (*Tilia Americana*), a 60-foot rapid grower especially adapted to coast climates; American white elm (*Ulmus Americana*), a rapid grower reaching 120 feet, requires moist soil so is not so suitable for interior valleys.

These may also be used for grouping at the rear of the grounds, to form a setting for the whole picture. Tall trees will be used in the rear, of course, and the lower growing sorts in front. If the group is a large one, shrubs are used to blend the whole into the picture in front.

Now is the planting time in California. Above all things strive to make garden pictures by keeping the lawn open in the centre. Don't make your garden a sort of museum

Ornamental Lawn Trees

Where there is room for a few ornamental trees, or where there is space for only one or two trees along the boundary line or in the back corner of the lot, some of the following might be selected. They are all valuable for their ornamental qualities:

Reitenbach's purple maple (*Acer Reitenbachi*), a 50-foot tree with foliage greenish-red in spring, purple in summer, and bright red in fall; red flowering horse chestnut (*Aesculus carnea*), a 75-foot tree with red flowers in May; European or common alder (*Alnus glutinosa*), a 70-foot tree preferring damp situations; pink-flowered almond (*Amygdalus Davidiana*, var. *rubra*), flowers early and attains a height of twenty-five feet; common catalpa (*Catalpa bignonioides*), forty feet, rapid grower, flowering in spring; English hawthorn (*Crataegus monogyna*), forty feet, showy red fruit in autumn, fits into groups well; purple beech (*Fagus sylvatica*, var. *purpurea*), deep purple foliage in spring turning to crimson in fall grows eighty feet tall; varnish tree (*Koelreuteria paniculata*), brilliant golden blossoms appear on this 20-foot tree late in the season; cucumber tree (*Magnolia acuminata*), ninety feet, with a profusion of yellowish white flowers, not adapted to hot, dry climates unless protected while young; flowering peach (*Persica vulgaris*, var. *alba plena*), a 15-foot tree bearing large double, pure white flowers in April; purple leaved plum (*Prunus Pissardi*), a 20-foot tree with purple leaves and red-fleshed fruit; American mountain ash (*Sorbus aucuparia*), a 30-foot tree with foliage that turns orange red in fall and with red berries that hang on nearly all winter; Wier's cut-leaved maple (*Acer dasycarpum*, var. *Wieri laciniatum*), a silver-leaved, rapid growing weeping tree; Japan weeping rose-flowered cherry (*Cerarsus japonica rosea pendula*); European weeping ash (*Fraxinus excelsior*, var. *pendula*), suitable for training over an arbor; weeping Russian mulberry (*Morus alba*, var. *Tatarica pendula*), a vigorous grower; Babylonian or weeping willow (*Salix babylonica*), a rapid grower preferring moist locations.

SOME GOOD SHRUBS

The spring-flowering Thunberg's barberry (*Berberis Thunbergii*), has orange yellow blossoms which give place to bright berries in the fall. The foliage is coppery red in autumn. This variety is suitable for a hedge.

The sweet shrub (*Calycanthus floridus*) has fragrant chocolate-colored flowers. The wood is also fragrant, and the foliage is a rich green. It blends well in clumps of shrubs.

Siebold's double-flowered cherry (*Cerasus Sieboldii*, var. *plena*) grows to be ten feet high. In early spring semi-double flowers appear in great profusion. At first they are white, but later become tinged with red. Suitable for use as a single specimen.

One of the best April-blooming shrubbery plants is the Japanese rose (*Corchorus Japonica*). It grows to be eight feet tall and bears deep yellow, rose-like flowers an inch across.

In earliest spring appears the scarlet Japan quince (*Cydonia Japonica*). The fruit is worthless, but the shrub is a good one for hedges.

The rose-colored weigela (*Diervilla florida*) has an abundance of rose-colored flowers in late spring. It grows six feet tall and enlivens borders or serves well when scattered among groups of trees.

An all-season bloomer is the coral tree (*Erythrina cristagalli*). The flowers resemble peas, but are much larger. Their brilliant crimson color is so striking that only one or two of these 10-foot shrubs should be used on one place, and this should be among other shrubs, or in a more or less open space.

One of the earliest spring bloomers is the golden bell (*Forsythia suspensa*), a drooping shrub with golden, bell-shaped flowers. It produces a pleasing result when a number of the 6-foot plants are used along the margin of a group of foliage.

The rose of Sharon (*Hibiscus Syriacus*, var. *bicolor*) produces its single white blossoms in summer. It grows to a height of six feet.

For a profusion of large blooms, nothing can quite compare with the Japanese hydrangea (*Hydrangea hortensis*), which flowers freely in summer. The blossoms are rose-colored. It does best in the cool coast climate. In the interior valleys it requires shade until it becomes established. The flowers of *Hydrangea Otaksa*, var. *monstrosa* are twelve to fifteen inches across. Although only about four feet tall, this plant produces a profusion of pink blossoms all summer.

One of the best hedges is the California privet (*Ligustrum ovalifolium*). It grows to be twelve or

(*Continued on page* 196)

Shrubs for California Gardens

(*Continued from page* 194)

fifteen feet tall unless it is kept pruned back. In June it is covered with white blossoms. It is not entirely deciduous in California.

The orange blossom fragrance is emitted by the blossoms of the garland mock orange (*Philadelphus coronarius*), which is suitable for shrubberies. It does well under trees.

Because of the resemblance of its flowers to the tail of the bird of paradise *Poinciana Gilliesii*, is sometimes known as the bird of paradise tree. The flowers are yellow with brilliant protruding stamens and appear all summer on this hardy bush. It reaches a height of six feet even on the poorest soils.

The scarlet pomegranate (*Punicea granatum*, var. *rubra*) serves both as a decorative and a fruiting shrub. The scarlet flowers are replaced by scarlet fruit that is almost as attractive as the blossoms. All summer there is a quantity of both flowers and fruits. The bush attains a height of twelve to fifteen feet. It groups well, and may also be used as a specimen shrub.

The smoke tree (*Rhus cotinus*) is so named because of its feathery fruits which in their profusion resemble a cloud of smoke. The flowers keep well and are valuable for house decoration.

The golden elder (*Sambucus nigra*, var. *aurea*) is splendid for enlivening shrubberies. The golden yellow of the foliage and the white blossoms that appear in June make this 10-foot bush attractive all season.

Almost everyone is familiar with the bridal wreath with its slender branches completely covered with small rose-like blossoms. Its flowers appear in May. It grows to be from three to six feet tall and will thrive in all soils. *Spiræa Van Houttei* is more graceful than the bridal wreath, but otherwise is quite similar.

For winter effect the snowberry (*Symphoricarpos racemosus*) is in a class by itself. The wax-like berries remain on the bare branches all winter. The blossoms are small and of a pink color. The shrub grows to be from two to four feet high and is especially valuable for planting under trees.

The Himalyan lilac (*Syringa villosa*) is one of the best white flowers of early spring. The bushes grow to a height of six or eight feet and they are extremely hardy, thriving on all soils.

The common lilac (*Syringa vulgaris*, var. *Charles X*) is also hardy. It produces an abundance of fragrant, redish purple flowers in early spring. The lilacs are suitable for specimen bushes at the corner of a building or on the edge of the lawn.

If you live near the seashore, one of the best shrubs to plant is the French tamarisk (*Tamarix Gallica*) a 12-foot, summer-flowering shrub with pink blossoms. It will withstand strong winds and will also thrive under trying conditions in the interior. Most any soil will suit it.

In May the Japanese snowball (*Viburnum tomentosum*, var. *plicatum*) produces an abundance of snowy white balls of bloom. This bush grows six feet high and in dry climates must be shaded the first season after planting.

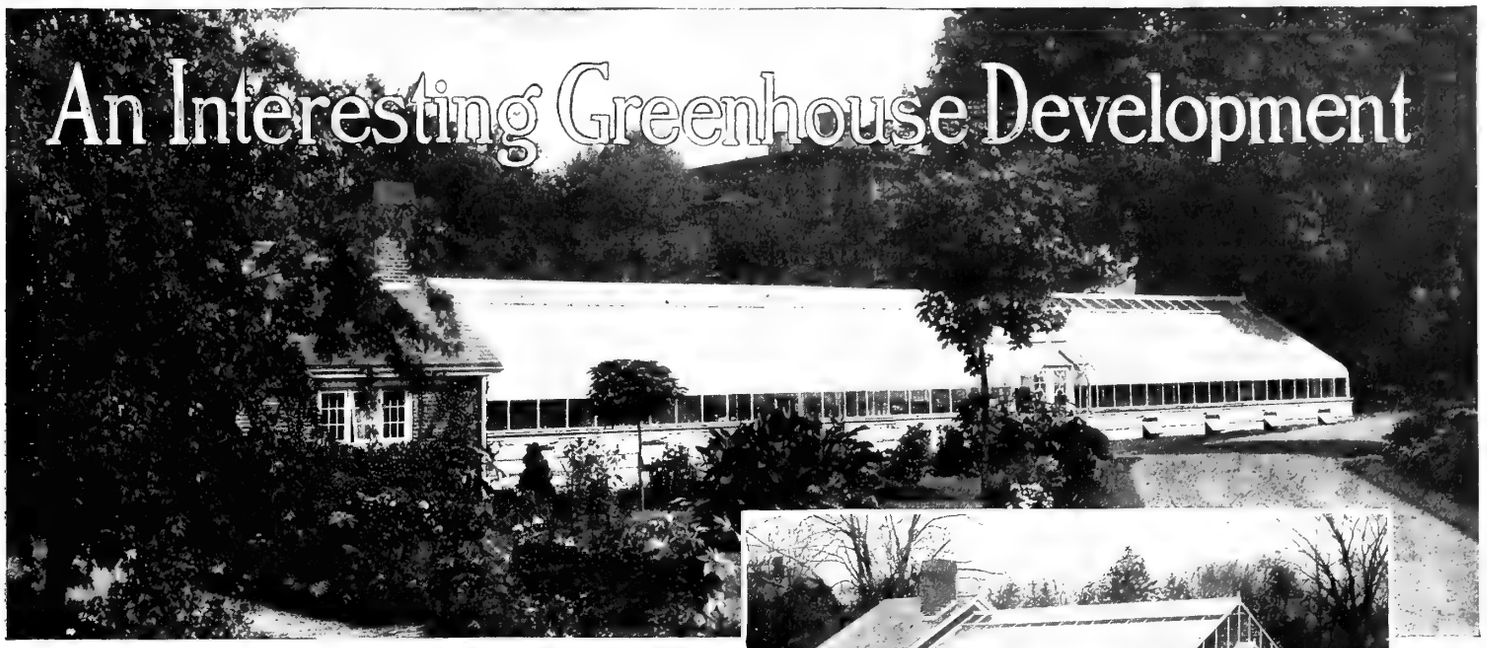
This Month's Cover

THE poinsettia (*Euphorbia pulcherrima*), which is shown in color on the cover of this month's GARDEN MAGAZINE, will easily be recognized as one of the popular plants of this season of the year. It is native to warm climates, and can only be grown under glass in the North; but in the warmer parts of California, it assumes the character of a tree in the open air.

When grown under glass it is best propagated by means of cuttings taken in April and grown on in a closed frame. The secret of success is to keep the plant growing without a check, and in a sheltered position, but with plenty of light. It can be grown on very much like a single stemmed chrysanthemum.

If cut specimens at this season of the year are found to be wilting, they can be revived by cutting off the lower end of the stem on which the milky juice has become hardened (thus preventing any water from entering), then plunging the ends into warm water for a few minutes while the end is still fresh. The "flowers" will then quickly revive.

An Interesting Greenhouse Development



IN 1907 we erected for Mr. Rutherford Trowbridge of New Haven, Conn., this one compartment house at the right. It was 23 feet wide and 33 long. Last year two more compartments were added as shown above.

We tell you this just to show you what a mistake it is to wait until you can afford to build, all at one time, as large a greenhouse as you feel you really want. Start with a small one now. Have it located and designed so that additions may be made to advantage at any time.

By way of comparison take the automobile. Only until recently has it ceased to be looked upon as a luxury, and become an accepted important part of our every day living scheme — a real commercial necessity.

All this has been accomplished in practically ten years, by the means of the avalanche of hundreds of concerns advertising. Consequently everybody knows automobiles.

Were there as many reliable concerns in the country exploiting greenhouses, then the mistaken notion that they are a luxury not to be possessed by those of modest incomes would long since have been dispelled.

You willingly spend for numerous other pleasures twice the cost of a U-Bar greenhouse again and again, and still continue to think in a vague way that they are too expensive but "that some day you intend having one."

Why don't you find out right now what one of our houses costs? Go into the details and give the question a fair chance.

We do not claim that U-Bar houses are the cheapest houses you can buy — as far as actual money expended is concerned. But it is true that because of their extreme lightness, no other house constructed without the U-Bars approaches it for lightness — and the lighter a house is, the better and more abundant is the growth it produces.

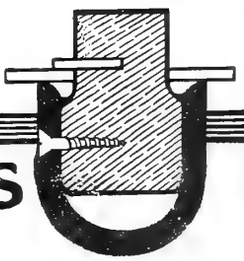
Having an entire frame of steel, the repairs on a U-Bar house are a negligible quantity.

The graceful airiness of the construction and its frank avowal of purpose makes them a charming addition to any grounds — small or extensive. Their delightful simplicity allows them to "fit in" practically anywhere. The comparing of U-Bar constructed houses with others, is so illuminating, that we suggest your doing it. Let us know where you live and we will gladly advise you of the nearest place where you can see both kinds.

Right now let us send you an interesting booklet entitled "Reasons." It really contains no reasons at all — save the names and locations of a goodly number of U-Bar greenhouse owners.

Every owner, we feel, is a reason for your reasoning along the same lines, and also becoming a U-Bar owner.

SOME of these bleak chilling days of December when the prospect of again having outdoors flowers in your garden seems an interminable ways off—you can imagine the joy it would to be to go into a U-Bar "Sunshine Shop" like this and pick flowers, forget your worries and bubble over again with joyous anticipations. Stol'd and hopeless indeed you would be if not stirred by such things.



U-BAR GREENHOUSES

PIERSON U-BAR CO

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CANADIAN OFFICE, 10 PHILLIPS PLACE, MONTREAL

If you wish to systematize your business the Readers' Service may be able to offer suggestions

Gardening for Young Folks

(*Continued from page 192*)

"I'll build my raised benches to-day. My solid ones are made of 1-inch cypress and are twelve inches high, but for these I'll use 1-inch pipe for legs and seven-eighths spruce boards.

"Nellie, come out into my greenhouse and see how it looks! To-morrow I will be eighteen years old and my greenhouse has been running six weeks. My bulbs are up, so are my radishes. May 5th: To-morrow my interest is due and I have sold potted bulbs and radishes from my greenhouse to meet it.

"To-morrow, Nellie, is Nov. 6, 1912. Interest on my note comes due; I'm going to write down everything I've borrowed and everything I've sold and see if I can meet my interest.

PAID OUT

Greenhouse	$ 25.00
Glass and glazier	124.00
Heater and steamfitter	179.19
Plants	19.05
Marsh, for bricks	21.00
Cypress lumber	53.16
Lumber for office	77.38
Flower pots	26.75
Carpenter	34.55
Tobacco stems	.25
Geranium	19.50
Mason	11.00
Sand	9.50
Windows and doors	15.05
Rubber roofing	4.90
Cartage, nails, etc.	8.40
Insurance	9.40
	$645.93

EARNED

Had on hand	$175.00
Plants	254.36
Soil	3.25
Repotting	.60
Funeral design	17.50
Work as instructor at Central Church Children's Gardens	36.00
Living bouquets at Memorial	43.05
Window Boxes	19.00
At St. John's Cemetery Gate Memorial	37.94
Cut flowers	21.28
Driving auto	38.00
	$646.08
	645.93
Balance	$ .15

"Looks to me, Nellie, as though instead of paying interest I'm going to meet my notes. Don't bark like that. Keep it quiet. I'll just tell Pa but if anyone asks what makes us look so happy just say 'It's Christmas all the year 'round for us now.'"

Roses From Slips in Oregon

AN ARTICLE in THE GARDEN MAGAZINE for January, 1912, "How I Grew a Rose Bush from a Slip," caused amused comment in Portland where everyone grows roses and "swapping" rose slips over the back fence is an established custom.

Doubtless climate and soil have much to do with the fact that rose bushes can be so easily grown from slips here but the process is very simple. The method followed by the large growers is to cut the slips in September or October. Small cuttings are considered best, about the size of a lead pencil, and only eight to ten inches long. The end that is to go in the ground should be cut just below a bud and straight across. It has been found, after much experiment, that the slips will then send out roots evenly and not form a one-sided growth as is the case when the cut is made diagonally. The slips are then placed in ordinary garden soil about four inches deep. They should be left until the following summer. Under no circumstances should the cuttings be transplanted in less than six months, as the first little roots are almost sure to be broken if they are disturbed in less than that time.

This is the method employed by large growers in this vicinity for starting thousands of bushes in the fields every year. It is no unusual thing for an amateur to establish an entire hedge of Caroline Testout in this way from cuttings from a neighbor's garden.

Oregon. STELLA WALKER DURHAM.

Winter in the South

DECEMBER is the month for planting out asparagus roots. The soil must be plowed deep and thoroughly fertilized. Use horse manure and turn it well under. If you put down enough manure now it will last several years, and you won't have to make new beds every season. Asparagus will do better the second and third years after setting out the roots than it will the first year. Old asparagus beds may be given a dressing of manure in 6-inch furrows on one side of the rows, but for the best results put manure on both sides. A little kainit used with the manure will increase both quality and quantity of the crop.

Set out cabbage plants in the middle South about the last of the month.

Be sure that the hotbed sash is in good condition. Tomatoes, pepper, and eggplants may be started this month in it.

Plow all weedy soil, turning under the weeds so that they may decay. This also helps to hold the moisture in the soil.

Cultivate onions often to encourage rapid growth. Sets planted in October should be large enough to use by this time if they have been pushed by the use of good fertilizer and frequent cultivation.

Garden peas and more sweet pea seed may be sown about the middle of the month.

Spade the flower beds deeply so that the winter rains can thoroughly soak into the soil. Spread a good coat of manure over the soil before spading it if possible.

Some varieties of lilies do not arrive from Japan until this month; plant them, however, in the lower South just as soon as they are received.

Tuberoses and dahlias may be planted in Florida below the frost line.

Prune fruit trees, vines, and rose bushes during the month. It is also a good time to make cuttings from rose bushes, figs, pears, and pomegranates.

It is also a good time to make drain ditches and to build terraces and fences; also to dig up or blast out stumps in the fields.

Georgia. THOMAS J. STEED.

Winter Gardening In Florida

NOVEMBER, and not January, really begins the year in Florida. Tourists scatter along into the state all through October, but the rush begins about November 1st. If you come here with the expectation of staying from two to six months, rent a cottage by all means and have a "winter" garden, which will give an abundant supply of green vegetables all the time you are in Florida. A cottage with plenty of garden space can generally be rented for about twenty dollars a month, and you can save at least one quarter of this amount if you get out of the soil all the potatoes you want to eat, and all the carrots and fresh greens. You can put seed into the ground as early as September or October, and as late as the first of January. I made my first garden in December; and even then got enough out of it to pay for the work and considerable over. Of course, you are liable to have tender plants caught in a frost. Three or four frosts can be expected in the course of a winter. Have a few bushels of pine needles at hand, and some newspapers, to cover over the plants without touching them.

The soil of Florida seldom contains lime, although it has a limestone strata far below the surface. Sour soil is the result. Lime is cheap and easily obtained here in the state; we can buy it by the car load for about forty dollars. Commercial fertilizers will be needed, sometimes, to supply a little potash; but where barn manure can be obtained it covers all needs. Legumes, like cow peas and velvet beans, grow here as if they would never tire of growing; and after being mowed for hay, all of them leave a splendid material to plow under for humus.

If you are to stay here for more than a single year, I advise you to commence making a compost pile. Make it of any vegetable material that you can rake together, especially the leguminous. Let it decompose for a year or so, with plenty of lime intermixed; then spread it and plow under. All around the lakes (and they are everywhere) you

STATEMENT OF THE OWNERSHIP, MANAGEMENT, &c., OF THE GARDEN MAGAZINE

Published in accordance with the Act of Congress of August 24, 1912.

Editor, Leonard Barron,	Garden City, N. Y.
Managing Editor, Leonard Barron,	Garden City, N. Y.
Business Managers, Doubleday, Page & Co.,	Garden City, N. Y.
Publishers, Doubleday, Page & Co.,	Garden City, N. Y.
Owners, Doubleday, Page & Co.,	Garden City, N. Y.

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No bond, mortgages, or other securities of indebtedness outstanding.

(*Signed*) DOUBLEDAY, PAGE & COMPANY
By F. N. DOUBLEDAY, *President.*

Sworn to and subscribed before me this 1st day of October, 1913.

(*Signed*) Albert H. Jennings, Notary Public
Nassau County, N. Y.
Commission Expires March 30, 1914.

can get muck; add this freely to your compost pile, but add all the more lime. Never waste a weed anywhere in the world, but especially in Florida where the sandy soil has been burned over annually and most of the humus destroyed. The compost pile is an essential of good gardening in the North, but more especially in Florida. Burn up nothing that you can turn into soil; neither throw it away. Save every inch of vegetation that Nature gives you; and in two or three years you will have made some splendid soil for your garden.

Still more important is it to always have a bountiful supply of water. Remember that winter is our dry season, and we sometimes go without rain for two or three weeks. Every home here should have a good well (generally from fifty to sixty feet in depth). Small lakes are very abundant in the centre of the state, and it is well to locate near one if you can. Most of these lakes are surrounded with a large margin of muck, and these are the best garden plots to be found. I have installed an engine, with air-pressure tank, in connection with my unfailing well. This serves also in the place of two or three hired men about the grounds and buildings.

The rotation of crops is usually as follows: Potatoes in January or February; melons in February or March; sweet potatoes in May or June; and corn a little after the potatoes. In the winter garden we want things to commence growing very quickly, like radishes and lettuce and several kinds of greens. The best of the latter for this climate is the Chinese petsai, growing very strong and rapidly, somewhat similar to Swiss chard, but better than either chard or beets or mustard. This lasts all through December, as do turnips. For myself I grow a few roots of what we call in the North scoke, and in any of the orchards sorrel grows in huge bunches. These together make greens hard to beat, and you can have them almost as soon as you get settled in your Southern home.

Beets and cabbages are ready for Christmas, and collards and cauliflower all through January. I always give a large space to carrots; they need early weeding but mature with great rapidity and last for three or four months. Dwarf kale is another of the very finest vegetables for Florida, standing light frosts very well. Nor do I ever go into the winter without providing a large supply of onion sets; Little Bermudas or Yellow Danvers take finely to our sandy soil and can be had all winter.

I am myself very fond of beans, especially string beans, such as I have grown in New York (from varieties of my own originating) but I do not get them as fine in quality here as in my Northern garden. I recommend the putting over of peas and beans to the spring or summer garden; only plant them early. Dwarf limas do far better than any other sort that I have tried. Sometimes they will be laden down with pods, but again they will blossom profusely without perfecting pods. Another thing to look out for is that much of our soil is charged with root gall, and it is all very much in need of lime. Peas and beans will show very quickly if there is root gall present, and you will find spinach and many of the legumes will also stop growth.

I have so far named no vegetables which will not be right for a hurry garden, and for a stay that will not exceed two or three months; but if you are to stay five or six, you can add peas and beans, eggplant especially, squashes, okra; and more important yet, plenty of white potatoes. We do not plant sweet potatoes until May or June; we begin to dig them in September, taking them from the ground as we need them. The white potato we plant twice a year, generally a small supply in our winter garden; and in January or February, we do our field planting, for exporting to the Northern markets. We can grow just as good potatoes and corn in Florida as in Missouri or Massachusetts. Asparagus and pie plant will serve very well after you have made some soil.

We generally add to our garden a few cosmos plants, which blossom very quickly, and a good bunch of nasturtiums. These we grow so that we can have the cut flowers from them on the dining room table every day of the year and to remind us during winter time of the cold and dreary North!

Florida. E. P. POWELL.

Heating a Little Glass House

I AM getting too old to worry over a hotbed in spring, but I did want a place in which to start seeds for my cold frames. My office is in an independent building east of my dwelling and connected with it by a terrace porch. It is 10 x 16 feet, with a door in each end. There is a cellar under it, and the brick work comes up three feet above ground. I determined to put up a greenhouse on the sunny east end so that I could walk into it directly from my desk. To bring it on a level with the office I had to build a brick wall three feet high.

The whole greenhouse structure is 6 x 10 ft. The roof is a lean-to against the office wall, and made of three hotbed sash. On the east side, above the brick work, I put in another sash sidewise, and still another on the south end. These sash are hinged at the bottom to open out wide for ventilation. A floor two feet wide, extends along outside the office door, and the bench is four feet wide and extends around each side of the door to the wall of the office. One side being used as a potting table, and the other for some tall plants. Making the bench three feet above the floor gives me six feet under it, and as the sash on the side and end extend below the bench, there is some sunlight under the bench. I have there a bed planted with the everblooming begonias simply to have something green and blooming.

The heating of this little structure was at first a puzzle. As I have an open fire place in the office and an extra flue from the cellar, I at first thought of putting a stove down there and running a flue around the house. But happening to look over a hardware catalogue I saw in it what they called a tank heater, a little cylindrical hot water boiler to heat tank for baths. I argued that if the thing would heat a tank it would heat pipe radiation. I bought it, with the necessary piping, and expansion tank, all for $30.95. Then I placed the little boiler in the cellar, and took the flow pipe straight up through the floor of the office, and along the wall to an open expansion tank in the corner of the office. I made this the highest point in the system, and from there the piping all runs down grade through a coil of eight pipes, nine feet long, hung on the brick work under the bench, and thence back to the boiler. This hot water system cost $16.00 to install. I seldom have a fire in my office fireplace as in mild weather with the greenhouse door open, I get heat enough. The economy of the heating has been wonderful; in average weather I make up the fire in the evening, get the piping hot, fill up the stove at bed time and close the draft, and it holds the heat well till morning. One hodful of coal does the business. In cold days I use a little more to keep the fire going, but the average coal consumption is not much over a hod a day. The main difficulty I have, except in extra cold nights, is to keep the little house from getting too warm. I want a temperature of 60 at night, but with the piping hot and the office door shut, it will soon run up to 70.

Now for the results. I get all the seedling plants, both of vegetables and flowers that I need. Last spring I raised my tomato and eggplant for the frames, and grew a great amount of seedling coleus, begonias and Japanese chrysanthemums, far more than I had room to pot. Then when these were out I started tuberous begonias and gloxinias, and had a wonderful display all summer. I dried off these, and filled up for the winter with begonias of the ever-blooming sorts, *Asparagus plumosus*, and other things for cutting. Some of the asparagus is planted under the bench. I shall have room in the spring to start some tomatoes, etc., in flats for transplanting to the coldframes, and in boxes of sand I root cuttings of geraniums, etc., to pot off for spring bedding. I should also have stated that I started last spring a fine lot of dahlias and chrysanthemums from seed. A few of the extra good seedling dahlias I will keep inside for spring propagation.

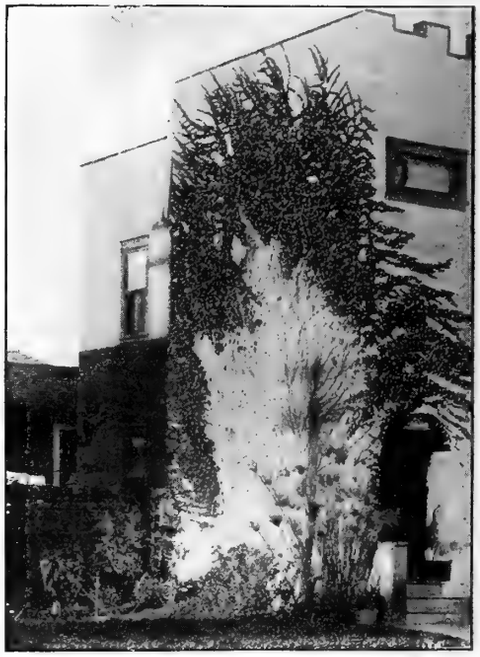
The little greenhouse cost altogether, with heating apparatus installed, about an even $100.00 and it beats a hotbed a long way both as to effectiveness and convenience.

Maryland. W. F. MASSEY.

The Readers' Service will give you suggestions for the care of live-stock

Resting Time for Boston Ivy

THE Boston ivy, well known throughout the eastern part of the United States, instead of dropping its leaves at once in a semi-tropical country, simply drops its old leaves which have done their work, and retains its new fresh ones. In other words, it "adjusts" itself to the new condition. In the picture the part of the vine which has leaves is this year's growth. The part of the vine whose



The "rest cure" for Boston ivy. In California when the season is over the old part of the vine rests

branches are bare are last year's growth and it is now resting. This photograph was taken in December. Seven months later what was, at that time, the extremity of the vine was bare and resting.

Boston ivy is one of the few plants in Southern California to show autumn colors. The plant then becomes very beautiful and the leaves keep their bright colors for months.

California. EDITH C. M. BRANDEIS.

Fence Problems

IF ONE is to enjoy all of the comforts and many of the luxuries which should abound on every farm, then one must keep stock of more than one kind, even if the list goes no further than hens and a cow. And where stock is kept, the problem of fences confronts the owner or tenant, and frequently the call for fencing on the small farm is more imperative than on the large one. Small places are often near large centres where it is difficult to procure posts. To make concrete posts is possible, but slow work. Having some old iron pipes and being in straits for posts, I attempted to utilize them for this purpose, driving them into holes made by a crowbar in the soil.

To my intense gratification they have answered admirably, and after three years' service have not heaved with the frost nor caused any trouble, while the net fence hung on them by heavy, home-made hooks dropped into their tops and held in position by wire bands near the ground, has remained unchanged so far as I can determine.

Pipe with a diameter of one half inch (inside measurement), has proved too slight for practical use except for fencing poultry and rabbits, but that which is three fourths, one inch and larger serves as well as wood posts and promises to outlast wood. If galvanized pipe can be secured, of course its life will be longer than in the case of plain or "black iron," even if painted.

As with everything else, care in selecting the materials and in putting up the fence pays.

Maine. S. A. GEER.

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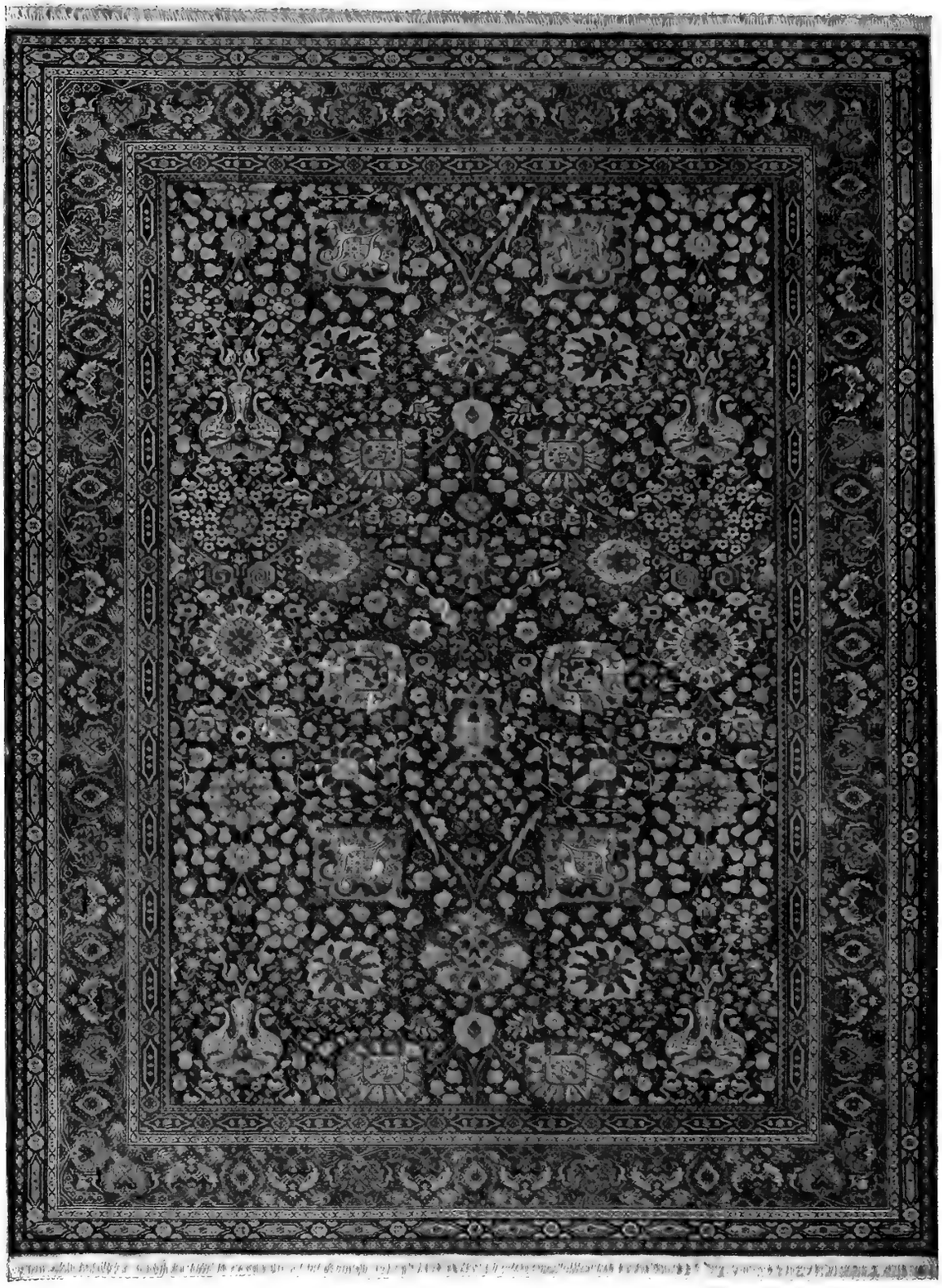

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THE GARDEN MAGAZINE

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Efficiency in Backyard Gardening
Californian and Southern Planting Tables
Hotbed Management
Using the Greenhouse

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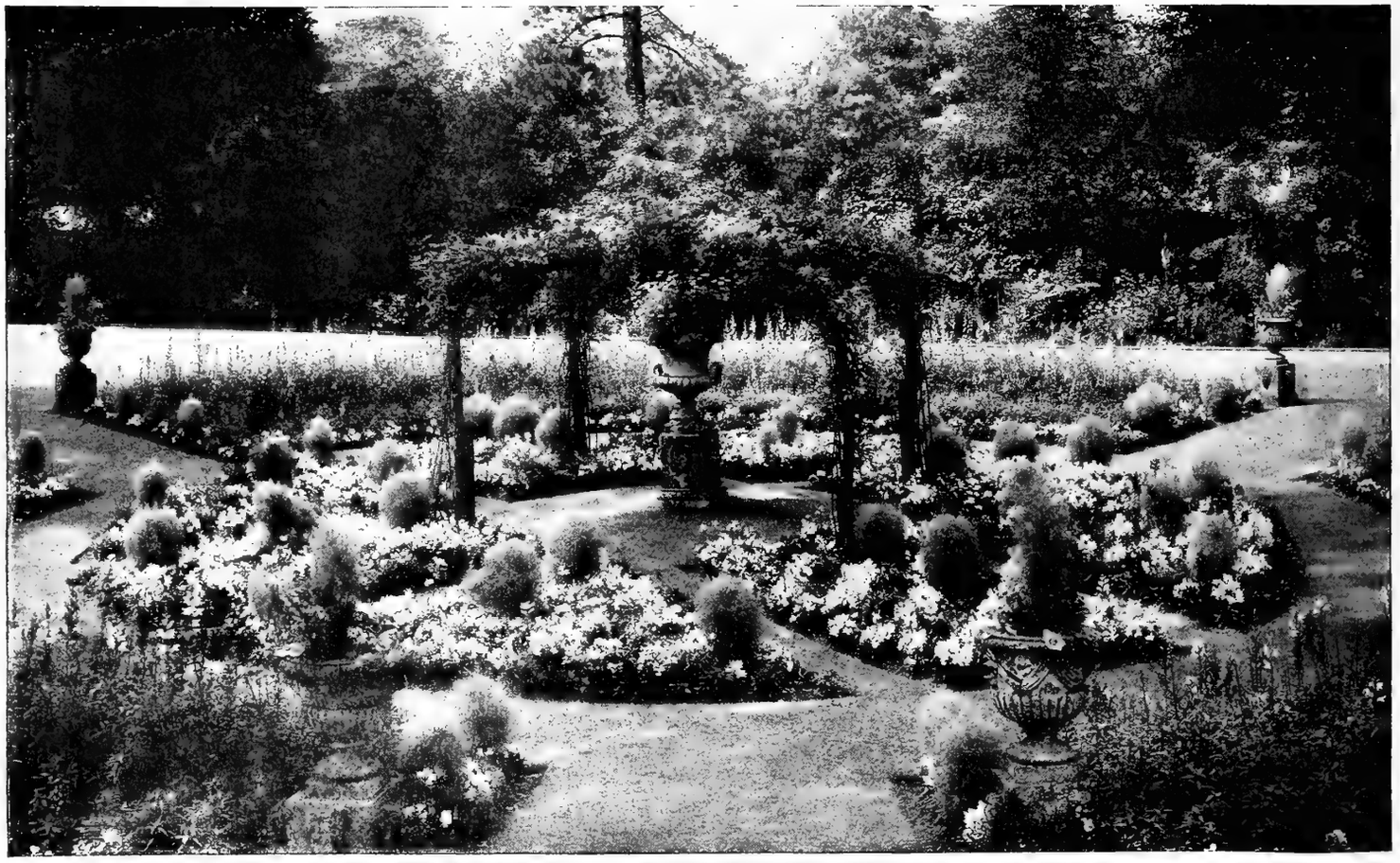

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THE TALK OF THE OFFICE

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

In Praise of 1913

SOME esteemed contemporaries have said hard things concerning the late departed year of 1913. For many it brought misfortune, dull business, and political upset, yet for others, the year was prosperous and portended even better things to come.

Perhaps optimism is the result of habit more than a state of mind. Our own vivid memory goes back quite a good many years, through times of boom as well as of financial storm, but never can we remember a period when *all* skies were clear and when most men did not say that things were "unsettled," and until such and such a matter were fixed this country could not go ahead, etc., etc.

Times were unsettled in 1913, yet we had no famine in the land, no great crisis, financial or social, an increased world's trade, and no lack of new and interesting experiences; and though prices went up, most people found the money to pay them, bought more luxuries than usual, and perhaps best of all, the year saw great advances in the willing coöperation of almost all classes to study the needs and rights of the people who have had the smaller share of this world's good things.

Doubleday, Page & Co. place themselves unreservedly on the thankful side. The year has not been a summer holiday, the pace of competition seems to be increasingly swift and difficult, but the twelvemonth saw many things accomplished and new vistas both interesting and hopeful opening for 1914, with new high records to surpass and a better and closer knit organization to accomplish them.

For what happened to us in 1913 we must, of course, thank our friends, and they include first the writers who entrust us with their books to publish. To our customers who buy and read these books and our magazines in an ever increasing number — thanks be — and not by any means least, our thanks are due to the members of the bookselling craft who have passed along our wares from the printing presses of Country Life Press to the reading public in amount almost twice as much as ever before.

We wish, too, that our pen might be touched with the real spark to tell of the loyalty of hundreds of the people here in the organization often under very trying circumstances. We feel sure that it will all lead to better and bigger things in the years to come.

Mail Delays

The attention of readers of *Country Life in America* and *The Garden Magazine* is called to the fact that the Government now sends magazine mail by freight instead of letter mail, which results often in much delay, which it is impossible for us to overcome.

If your magazine is unduly late, complain to your Postmaster, as the Post Office Department is the only possible source of remedy.

That Little Book

which tells the story of Country Life Press is at last in print. For months it has been pushed aside for more pressing work, and Mr. Gilliss, who has arranged the book and fathered it through the press, has been delayed beyond patience. However, it is ready and will be sent with our compliments to all who wish it.

The Williamsons in Egypt

The authors of "The Lightning Conductor" and its train of delightful travel books spent last winter in Egypt and the Sudan, and a novel entitled "It Happened in Egypt" is the result. Very few writers of novels take the time and trouble, not to speak of the money, to gather material for a novel as the Williamsons do. Their pictures of peoples and places are actual, the result of personal experiences, and this book with the glorious background of Egypt is perhaps the most picturesque of all.

It will be published January 10, 1914.

The Seven Seas Kipling

When this is printed we don't know how many copies of the limited edition of 1050 sets will be left. Four volumes are ready and two volumes every two months will complete the set in 23 superb volumes. The price is $6.00 a volume. Each set is numbered and signed by Mr. Kipling. It will be a set of great and lasting value as the years go by.

Send to Doubleday, Page & Co., Garden City, for a descriptive circular.

The 1914 Investor's Almanac

The Investor's Almanac gives you complete and accurate information about investments, dates of maturing bonds and all other data for the investor. Postpaid for 35 cents.

Aids to New Resolutions

This is the appointed season to turn over new leaves. Of all the leaves we know which *Garden Magazine* readers should keep handy as guide, philosopher and friend, the "Garden and Farm Almanac" is the most important. This Almanac has become an institution, and we hope a good and not a dull one. Each year we think we find some way to improve it and make it fit more perfectly its field. Particularly are we anxious that it should be good because it is the only one of its kind; it has no competitor and we hope that readers will find that no other is necessary.

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(Partial)

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Guide for the Best Annual Flowers
Composition of Milk of Different Breeds
How to Build a Storage Cellar
How to Make Cloth Waterproof
Iceless Cold Storage
How to Make and Use Concrete
Breeds of Ducks
Raising Pigs for Profit
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Enclosed find 35c, for which please send me the Garden and Farm Almanac for 1914.

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JANUARY, 1914

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Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879
F. N. DOUBLEDAY, President HERBERT S. HOUSTON, Vice-President S. A. EVERITT, Treasurer RUSSELL DOUBLEDAY, Secretary

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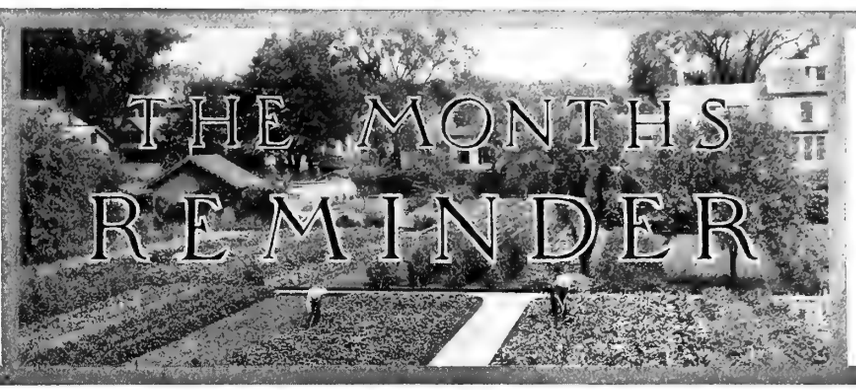
The Garden Magazine

VOLUME XVIII JANUARY, 1914 NUMBER 6

For the purpose of reckoning dates, the latitude of New York City is generally taken as a standard. In applying the directions to other localities allow six days' difference for every hundred miles of latitude.



Chief activities of this month: Reading up the new catalogues, making out the seed order, planning the season's work, moving large trees, getting tools in order.

BEFORE all else get acquainted with the new season's catalogues and novelty offers. Write to-day for such as you need. This is the cornerstone, basis, foundation, veritably the fundamental step in building a good garden.

The succeeding steps, many of which are discussed in detail on succeeding pages of this number of THE GARDEN MAGAZINE, may be set down in order, to be checked off as you accomplish them.

1. Make a map of your garden plot to scale, not less than one-half inch to the foot if possible.

2. Make a list of seeds and plant requirements (after the catalogues arrive, of course), taking into account:

a. The size and capacity of your family and its special preferences as to varieties, etc.

b. The limitations and special adaptations of your soil, location, climate, etc.

c. The probable water, manure and labor supply for the coming year. Don't try to raise more than you can really care for.

Note: Don't forget to try, on a small scale, two or three "novelties," as well as the standard, well known sorts.

3. Work up a detailed plan of the garden, involving every square foot of space, all the seeds you order, and the entire season's range. Observe as closely as may be these principles:

a. Plant in rows the long way of the garden, not in beds. (An exception is corn which, in a long, single row or two, is liable not to pollinate. Therefore, plant it in blocks.)

b. Run the rows north and south if possible.

c. Put the tall, dense crops—corn, pole beans, etc.—at the western end where they will shade the others the least—that is, from the late afternoon sun.

d. Group rows of crops needing one foot or less between them at one end, those needing eighteen inches next, and so on, gradually increasing the spaces as you go.

e. Keep together, however, the perennial crops and next them the all-season sorts, such as carrot, salsify, parsnip, etc. Small, quick growers can often be worked in between larger but slower maturing species.

f. Make use of the possibilities of succession as well as companion cropping (just mentioned).

4. Make arrangements for manure to be spread at the earliest moment, unless it is being applied daily from your own stable.

5. Look up the tool inventory made (presumably) last fall, or go over the tools themselves and make a list of necessary replacements and repairs. Then, don't file it away and forget it, but buy what is needed at once.

6. What spray materials are you sure to need? Better make out an order for them while in the tabular frame of mind.

7. Buy or make wooden labels and write on them the names of varieties you are sure of using.

8. Complete the plans for that hotbed.

9. Get a place ready for the seeds you order where they will be safe from mice and moisture until planting time. An old tin bread box is just the thing.

Indoors with the Growing Plants

CHRISTMAS and New Year's presents of growing plants need not be discarded when the first flush of blossoms fade. In most cases you can cut off the flower stems, give the plants a rest by keeping them almost dry for a month or two, and then, by gradually watering and feeding, bring them into condition to bloom freely some time during the summer. Daisies, azaleas, begonias and most woody plants can be so treated.

But it rarely pays to save tulip, hyacinth, and other bulbs that have been forced to a magnificent splurge of bloom and a state of utter uselessness for the future.

Give all house plants a real shower bath every fortnight or so, and every now and then set pots containing ferns and other moisture lovers in water nearly up to their tops until the soil is thoroughly wet.

Continual watering from the top tends to pack the soil and destroy its aëration. Loosen it with a small stick or fork every little while.

A weekly, weak solution of nitrate of soda (or the pulverized manures that can be bought in pound packages) is better than a monthly dose of a rich, concentrated extract, especially for plants that are in weak, impoverished condition.

If you belong to a garden club, don't let the meetings become uninteresting just because you cannot be outdoors. Now is the time to enjoy those little theoretical, technical discussions on botany, plant breeding, plant physiology, fertilizers, etc., that make gardening something more than mere digging and weeding and bug killing.

Besides, who says you cannot be outdoors now? How about a Saturday's tramp and a subsequent discussion on "Winter Colors with Evergreens and Bright Berries?"

Thoughts of Outdoors

ONE of the best things you can do now for the 1914 garden is to think about that of 1913. Wherein did it satisfy you, and wherein disappoint? What things have you learned not to do and what others did you wish you had done and swear to do "next time?"

In spite of snow and frozen ground you can:

(1) Lay out your ground and measure it accurately, preparatory to making the careful map and plan mentioned above.

(2) Spread manure.

(3) Cut out dead wood and do odd pruning jobs to improve the shape of fruit trees and bushes.

(4) Look after the protective coverings on borders, lest they get water soaked and solid; and on roses and young evergreens, lest they blow away.

(5) Give the birds a treat and enlist them for your next insect campaign, by scattering crumbs or grain about, and by tying bones and suet in the trees.

(6) English ivy (*Hedera Helix*) is ordinarily hardy, but on the north side of a building or wall, a protection of burlap or

straw matting will often save a good many leaves from falling in February and March.

7. Three kinds of trees are better destroyed (cut and *burned*) than treated, because of our present inability to cope with their ailments. There are (a) hickories badly infested with the hickory bark beetle; (b) pear trees badly attacked by fire blight; and (c) locusts riddled by the locust borer.

8. Peach trees — that is, the trunk and larger limbs — can now be washed with a one-fourth solution of ferrous sulphate to destroy the spores of peach rust.

9. Now, when the ground is frozen is a good time to move large trees, and evergreens of all sorts (with a solid ball of frozen earth).

News Notes and Comments

PEAS IS PEAS

THIS is a true story with some practical morals. "Last summer," writes a correspondent, "being shown some Thomas Laxton peas and told how good they were, and being, moreover, fond of sweet, luscious melting peas, I decided to grow some of that variety this coming summer. With this intent I asked for them at the grocery store of John Doe, but was told that he did not have them. 'However,' said he, 'Gradus is the same thing'; the salesman had told him they both came out of the same bin in the seed supply house, and Telephone as well. As it happened he had assured me the year before that Gradus and Telephone were the same, although Laxton hadn't been mentioned.

"Of course Gradus is all right; I think highly of it myself, but this time I wanted Thomas Laxton, so I went on to Richard Roe's, where one always expects to get the best, whether seeds, spices, or what not. But, strange to say, he too could not supply Thomas Laxton, but didn't mind telling me that Gradus was just the same — came out of the same bin in fact, so the salesman told him, and if he didn't know, who would? But he went Mr. Doe one better, by offering me part of a limited supply of some peas he called Roe's Choice, in order, he said 'to keep people from knowing their real name.' And his candid opinion was that they were simply the 'finest ever.'

"Now I want to know why Thomas Laxton, a pea so highly prized and recommended by many, should be suppressed and merged into the personality of another variety which, I had always believed, is not only different but in some respects inferior. Or do these salesmen think we don't know beans — or rather, peas — and cannot read the catalogue descriptions? One . . . dealer said in his catalogue, last year that the seed crop of Gradus was almost a failure for that season. But this could not have been the case around here according to my experience, unless, indeed, that versatile 'bin' was filled with something that was neither Thomas Laxton nor Gradus either."

That's the story, a not uncommon experience and here are the lessons:

Moral I. Buy your seeds from reliable houses, specialists if possible, who have reputations to support; and not from corner grocery supplies that all too often are no better than the free expressions of Congressional generosity.

Moral II. Read Mr. Kruhm's and other's articles on the best varieties of different vegetables in back volumes of THE GARDEN MAGAZINE, and choose from catalogues that honestly describe those things.

Moral III. Don't accept the word of the uninformed storekeeper — especially if he is trying to sell you something — as to the origin of plant varieties. As it happens Gradus and Laxton *are* related, having been produced at the same place by the same man although more than three years apart; but they are no more the same pea, nor identical with Telephone, than Dorothy Perkins is the same rose as Crimson Rambler, or the Barred Plymouth Rock the same fowl as the Leghorn.

FOREWORD ON HOTBED MAKING

NO GARDEN is really complete until it includes some device for discounting inclement weather of winter and early spring. A greenhouse is of course the ideal thing for it serves a multitude of purposes in itself, but when this is not possible a hotbed is the practical alternative. A hotbed offers several advantages quite apart from its inexpensiveness.

The first is the possibility of starting plants much earlier than they could possibly be started outside. They may then be transplanted to the open ground almost, if not quite, as soon as your neighbor begins to plant his seeds. It follows naturally that, with proper care, your harvest will come from four to six weeks earlier than his.

The second is the possibility of fully maturing crops in these beds. Lettuce is delicious when forced very early and used in April or May; again, it may be invaluable to the housekeeper late in the fall or early winter when hotbeds may be utilized just as in early spring. Beets, spinach, carrots, radishes, bunch onions and other crops may be handled in the same way.

The third advantage lies in the fact that plants requiring a long growing season may be fully matured in a short-season climate by being started in a hotbed. Perhaps you have tried to grow peppers and had them killed by frost before the edible parts were produced. If so you can fully appreciate this point.

Fourth, the earlier starting and maturing of the plants has a tendency to lengthen the fruiting period, thereby returning larger crops. Also it aids in the utilization of space with companion and succession crops, again increasing the product.

A fifth advantage is the pleasure derived from the employment of all the preceding. Undoubtedly excelling over the neighbors in having the *best* garden is enjoyable, not to speak of the material convenience of having things "just so," and when most wanted.

Assuming then that you are going to have a hotbed, you must next decide, first, whether it will be one sash wide (3 x 6 ft.), two sashes, or more; and second, just what material to use. All wood is most common, but stone, brick, or concrete may be used below ground and wood above, or the wood may consist merely of sills placed upon the more permanent sides.

Next, plans may be drawn and estimates made for material needed — not only wood, cement and sash, but also manure or other heating agent, soil, mats, tools, etc.

The location for the hotbed should be carefully chosen. A southern exposure protected from the cold north winds is an ideal location.

These preliminary steps completed, you are ready to take up the actual construction, the cropping plan and operation of the bed.

WHAT IS THE BEST?

AFTER all, there is no such thing as a "best" rose; or any thing else for that matter. It all depends where you live. In other words, different varieties respond differently to different climates. This was very forcibly brought out the other day in correspondence from various parts of the country. Similar collections of roses had been tried in various sections. A correspondent from California reports Antoine Verdier as being by far the best; in Florida it was Marie Van Houtte; in Louisiana, the Queen; and so it goes. Each section has its one particular variety. What the average amateur wants to know is which is the one best suited to his particular condition, and we are always glad to have reports of this sort from our readers. The information is helpful to others.

INDEX TO VOLUME XVIII

THE present number completes Volume XVIII of THE GARDEN MAGAZINE and following the usual custom we have prepared a Title Page and Index to Contents for the convenience of subscribers who bind their back numbers. This index is gladly sent free to any one on request. Bound volumes are also to be had. Our new readers will find a wealth of practical information in the back volumes that cannot be repeated in the current year.

Efficiency in Backyard Gardening, I

By A. Kruhm, Ohio.

HOW TO DIG, RAKE AND PREPARE THE SEED BED—
SOME ESSENTIALS OF PRACTICE TO THINK OVER
NOW, BEFORE THE SPRING WORK ACTUALLY BEGINS

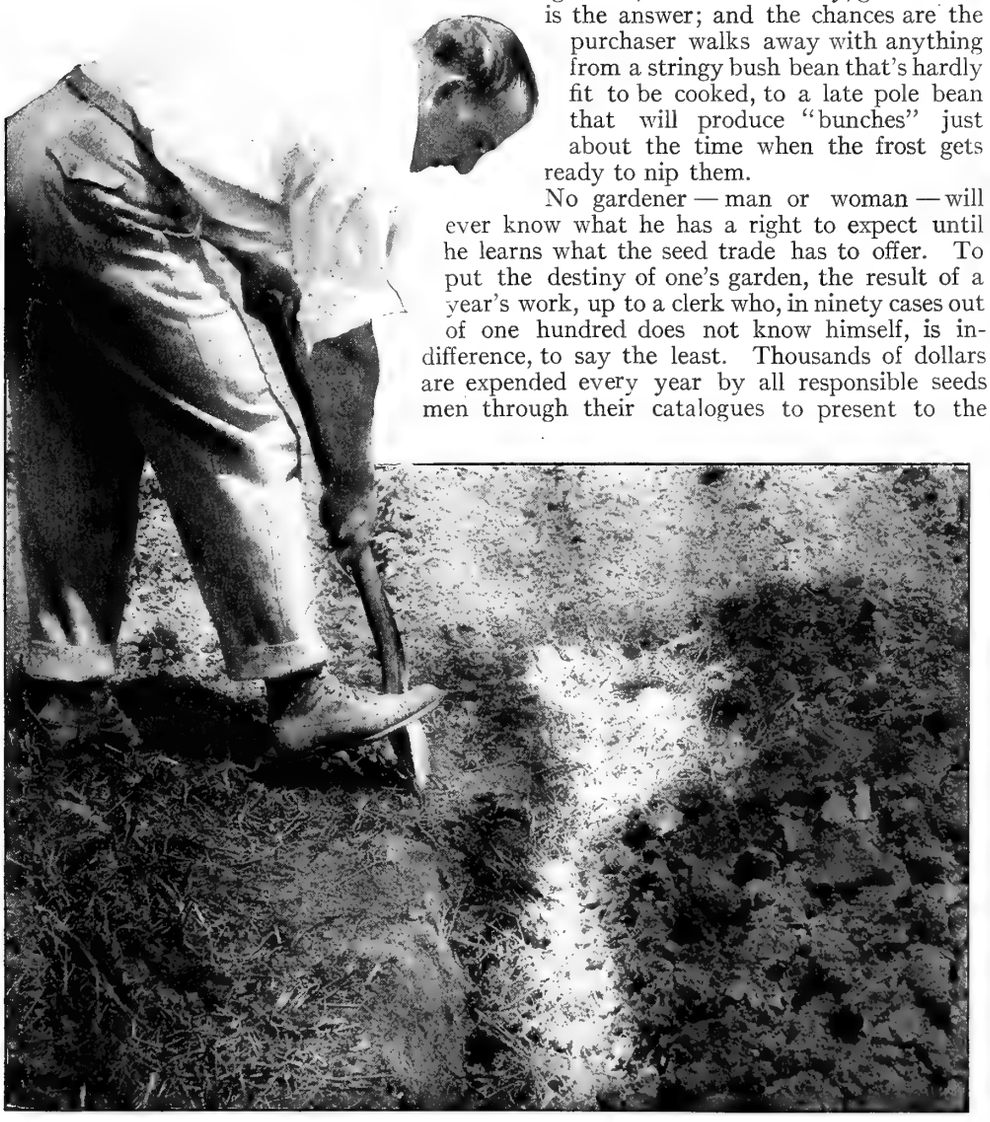
EDITOR'S NOTE—*This is the first of a new series of articles by Mr. Kruhm, whose illuminating writings on varieties of vegetables will be still fresh in our readers' minds. This present series will be devoted to the elements of practical work; as he himself styles it "the gospel of backyard gardening." First of all, it will explain the duties before every man who attempts to cultivate the soil. In the second place it will lay down "the rules of the game" that must be followed if the garden is to be a success. Finally it will state what every man or woman has a right to expect, if those duties are filled and rules followed.*

NINETY-NINE per cent. of all the failures in the home garden are due to two principal causes. First lack of persistency; second, indifference. Perhaps it would be permissible to substitute the word ignorance for indifference because indifference toward the real reason for things is what keeps people in ignorance. Most people regard their garden as a plaything, of which they get tired before the garden has reached its highest efficiency. Then indifference begins to rule: persistent cultivation, subsequent plantings, etc., etc., are passed by lightly — the duties of July and August are forgotten, and by September the garden presents a sorry sight indeed!

One particular phase of indifference deserves emphasis before dwelling upon the gardener's duties. This is the great mistake made by a vast army of well-meaning men and women, who full of enthusiasm (but with little foresight), wait until the last minute in the spring to order seeds. Chances are they will then walk to a local grocery or seed store and demand "a packet of beans, a packet of lettuce, 1 oz. of radish" etc., etc. "Did you mean 'bunch beans,' madam?" will ask the polite (but ignorant) clerk. "Certainly, green ones" is the answer; and the chances are the purchaser walks away with anything from a stringy bush bean that's hardly fit to be cooked, to a late pole bean that will produce "bunches" just about the time when the frost gets ready to nip them.

No gardener — man or woman — will ever know what he has a right to expect until he learns what the seed trade has to offer. To put the destiny of one's garden, the result of a year's work, up to a clerk who, in ninety cases out of one hundred does not know himself, is indifference, to say the least. Thousands of dollars are expended every year by all responsible seeds men through their catalogues to present to the gardening public the truth about the latest and best in vegetables and flowers. Yet, year after year, this public will demand "string beans," "red beets," "late cabbage," instead of specifying Bountiful beans, Crosby's beets and Premium Flat Dutch cabbage, etc., as the case may be.

No wonder the "science of gardening" is a thing of the future! Unless we learn how to do a thing, when to do it, and what to look for after it is done, we will be forever groping around in the dark hoping for more light. Getting more light is largely a matter of keeping records which will prevent us from making the same mistake twice.



Trenching to get the soil into proper condition. Turn the soil with the manure in the trench until another trench is made. Then fill with manure again. (Lime is dusted on manure in photograph to make the picture more illustrative)

An essential preliminary. Fill the trench with well rotted manure and tramp down tightly

SOIL PREPARATION

Several years of close observation have taught me that most writers on gardening topics take too many things for granted. "Dig the ground thoroughly" means very little to a vast majority of city dwellers, while the proper handling of a rake and hoe present difficulties to inexperienced gardeners that are beyond the understanding of the man who is "an old hand at it." Not all people are born with a gardening instinct to cultivate, which has proven a blessing for many a worn-out city man. I purpose now to begin at the very bottom of things.

Though more will be said in a subsequent article about the necessity of having good and proper tools, let me advise right here never to start with a poor spade or digging fork.

HOW TO DIG

Get a good, stout spade, which will prove preferable for all purposes. Push it firmly into the soil to its full length, which usually is twelve inches; use the spade handle as a lever, and lift and turn over the soil so that the soil from the bottom comes to lie on the top. Dig a row fifteen to twenty feet long in that fashion, then come back and place the second row of soil right on top of the first. You now have a trench nearly ten inches wide.

Fill this with well-rotted manure, tightly tramp down the manure and then repeat the same operation, turning over on the manure about two rows. Whenever there is an empty furrow, fill it with manure; and when a bed of fifteen to twenty feet long is dug to a width of ten feet, stop the digging long enough to rake that bed level and get the lumps off the surface into the furrow. After that, proceed in the same way until enough soil is dug to begin raking and planting.

The question of manure should not prove a stumbling block in the way of a luxuriant garden. Most livery stables in the suburbs are glad to let gardeners have the manure if they will pay for the hauling, while in many large cities the city refuse department will usually be in a position to supply tons of this plant food for a small consideration.

Use manure in preference to commercial fertilizers. Manure will make a permanent storage house of utility in your garden, while fertilizers will help to make available what fertility may be in the soil, without preserving a single plant growing element for the future.

One more thought about digging: Do not dig *too soon!* Enthusiasm drives many people into the garden when the first few warm days proclaim the nearness of spring. This is usually long before the ground is in a fit condition for digging.

To test the soil, push the spade deeply into the ground in several places in the garden and turn the soil. Pick up a handful of it and, if it crumbles up in mellow shape, go ahead and dig, but if a slight pressure of your hand will transform the soil into a mud-ball ——— wait!

In connection with soil preparation lay down the firm rule never to dig any more on any one day than can comfortably be raked and planted that same day. Suppose you dug

Raking the turned surface is essential for making a proper seed bed. The surface layer of soil must be level and finely pulverized

all day (if you could) and at night rain came. It would be a very difficult job to get that piece of ground in proper gardening condition the following day. Chances are it would have to be dug all over again, whereas, if it had been raked and presented a smooth surface to the rain, it need only be raked again.

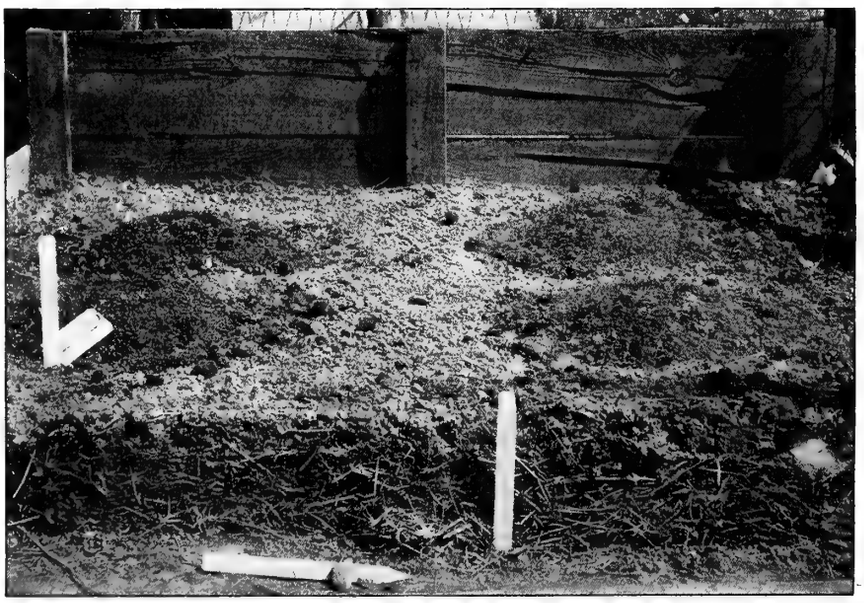
To rake properly is, perhaps, even more difficult than to dig. Anybody can dig, but it is almost a fine art to rake a piece of soil perfectly level. Deep digging is desirable, but fine raking is necessary, for it is the real preparation of the seed bed. The surface nurses the tender germs of the plants, the roots of which afterward may forage for life in the under-soil.

The best way to rake is to do the job in two parts. First go over the dug ground and try to level it roughly, taking the lumps along as you go and burying them in the furrow. Then go back over the same piece of ground, step by step, and rake carefully, pushing the teeth of the rake into the soil to their full length. Push and pull back and forth, until every lump is dug up, every hill is smoothed out and every hollow is filled. A depression of two inches means a hollow in a seed bed in which water will stand after a heavy rain and drown the seedlings.

It is good business to spend from half to three-quarters of an hour on raking a piece of clay ground 20 x 20 ft. The more thoroughly the raking is done, the easier will be subsequent cultivation and the more chance will the seedlings have of coming through. Proper digging and thorough raking having put the garden into prime condition, the next important step is the sowing of the seeds.

Sowing the seeds *seems* so easy — I have often heard people, who never did it, say "Oh! that's a cinch." As a matter of fact it takes a good deal of practice to sow a row of radishes evenly, thinly and quickly.

Here is one good way in which sowing seeds may be done: Tear open the flap of the paper bag where it is sealed. Fold a groove along the front of the bag so the groove extends clear along the bag and across the flap. Take the bag between the thumb and middle finger of your hand and tap the bag gently with the pointing finger, as you pass your hand along the row to be sown. All fine seeds may be sown in that fashion and one season's practice should make you efficient. With coarse seeds, the method may, of course, be changed to dropping each individual seed as far apart in the row as experience tells us is correct.



A happy solution of the "odd corner". Make it into an emergency bed with manure and soil. And don't forget to water in summer.

EMERGENCY GARDENS BUILT ON TOP OF GROUND

After digging hard for several weeks, after planning and raking and planting, there is usually a small piece of ground left in some corner, that "seems just too hard to dig." I heartily agree with the reader— it has been my experience in every garden I have ever worked! As a rule, it is away in some corner that is already overgrown with weeds by the time you get to it, and you don't feel a bit like digging that unpromising piece. At the same time, to let it remain as it is spells a regular breeding place for weed seeds, besides looking most unsightly all the time.

Here is one way out which will also be found to count for higher efficiency: Cut down all the weeds. Get four boards of even length, not less than a foot wide. Nail them together into a box-like structure—just as though you were constructing a hotbed or coldframe. If your bare space measures 6 x 8 ft., get two boards each 6 feet long and two boards each 8 feet long. Within these boards you can have 48 square feet of gardening space, built on top of the ground.

Into the framelike structure put manure — any kind will do. Tramp it down tightly until there is a solid layer of perhaps 8 inches of manure within your walled garden. On top of this manure spread soil to a depth of 3 to 4 inches; rake carefully, and your garden is ready for the seeds.

Lettuce, radishes, green onions, bush beans, all vegetables of compact growth may be grown with splendid success in this garden, and it is surprising what quantities of stuff 50 square feet will produce, in the course of a season. There is just *one* absolute essential to success with a garden of this kind, and that is an abundance of water. A thorough soaking every other day is none too much when rainfall is deficient. Care should be taken that the hose does not wash the soil, since in this type of a garden the soil is neither as compact, nor has it as solid a foundation as under natural conditions. Use a fine nozzle to spray this garden and soak it thoroughly at least twice a week. Crops from it will be a revelation.

Making Out the Seed Order—By F. F. Rockwell, Connecticut.

A PLAIN EXPLANATION OF THE RIGHT WAY TO SUCCEED IN FIGURING QUANTITIES FOR YOUR OWN NEEDS AND CONDITIONS—WHAT IS TO BE GAINED BY DOING ALL THIS NOW?

MAKING out an order for seeds may seem at first glance about the simplest thing connected with gardening which there is to do. As a matter of fact, if it is to be done properly it requires a good deal of thought, and not a little careful calculation. Furthermore it should be done *now*, while the ground is frozen so hard that you could not make a drill deep enough to plant a row of lettuce seed without using the pick. If you order now, while stocks of seed are complete, you will get the best seed and suffer no danger of substitution of varieties on account of depleted stocks. If you wait until planting time you will make out your own order in a hurry; it will reach the seed house when everybody is working overtime and "rushed to death," and stocks of some of the choicest varieties are exhausted. Further your order may be delayed in shipping, or transit, so as not to be on hand at the psychological morning or afternoon when planting should be done.

Did your garden last year satisfy you in every respect, or were some crops "bunched" so that you had more than you could possibly use for a week or two, and then for two or three months no more of that particular vegetable? Were you skimped on some things and over supplied with others? Were some vegetables stringy and tough, and others especially susceptible to disease? All these things result more or less from carelessness in making out the seed order.

Most people order seeds on a back-end-to principle. They buy the seeds and plant the garden to suit. It is only human nature when you have once opened a package of peas or beans to keep on planting until they are gone. It is also human nature to buy largely of those things which on the colored plates make your mouth water, and of seeds which are relatively cheap. This may be human nature; it is not wisdom.

Let us consider for a moment what is to be aimed at in a vegetable garden: First of all, of course, table quality; then continuity of supply — you will want as many things for as long a time each as possible — but you will need to guard very carefully against getting any one of them in such abundance at any time that it will go to waste; and thirdly you want your garden to go as far into the winter as possible — to stretch it clear around the twelve months if you can.

Now, what is the way you, or any one else for that matter, naturally figures up this garden stuff? By the row; not by the ounce, or pint of seed, not even by the number of lineal feet of drill, nor the number of square rods of garden. If last year you planted four rows of early beans and had more than you could possibly eat as soon as they begun to ripen; and only two rows of early sweet corn, and found that there wasn't enough so that you could have a third helping when any friends came in to dinner — then you have got something definite to work upon in figuring out this year's garden. Probably two rows of beans and four rows of sweet corn would come nearer the mark. And using two varieties of early beans and two of early corn to furnish a succession from the same planting, would be still more satisfactory.

Now take pencil and paper and write. Thing number one to be done: After each vegetable which you expect to have in your garden, put down the number of rows you think you will want, according to your past experience. Then, knowing the approximate length of your garden rows, you can easily figure out about how many lineal feet of row or drill of each you will have to buy seed for. Most catalogues will tell you how many feet of row a pint or ounce of this or that seed will plant. It is also set down in the table herewith. In the column marked "number of rows," I have put down what would make suitable amounts for an average sized garden for a family of average taste; but there is no hard and fast rule about it. Alter the figures to suit yourself. The rows are assumed to be 50 feet long in this sample case. The vegetables are divided into two classes which are marked the "stayers" and the "repeaters." The former are the things which will have to be planted only once in a season; the others, being quick maturing crops which are in the best condition for eating but a short time only, will need to be planted several times; and this, of course, will need to be taken into consideration when ordering the seed.

About one third of the task is now done. The other two thirds are to buy good seed, and to get varieties suited to your particular purposes. Where to get seeds which will give you the best satisfaction must be a matter depending largely on personal experience. The result of my own experience of a good many years has convinced me that no one seedsman has the best of everything; even a seed expert cannot tell good seed from bad seed in the majority of cases, and no one can tell high-bred from poorly bred seed by sight. The seed buyer is dependent absolutely upon the seedsman's honesty — therefore it pays to deal with a firm that has a good reputation back of it. If you buy your seeds, either in package or bulk, at a local hardware store you take chances. Above all, never let cheapness influence the placing of the seed order; the most expensive seeds are not necessarily the best, but the cost of seeds in proportion to the expense of planting and cultivation, and the value of the crop, is, in most cases, such an infinitesimal item that your sole concern should be to buy the *best* seeds that you know how, quite regardless of cost.

Here is one suggestion that you will be pretty safe in following. In buying any variety which has won a good reputation for itself, get it from the firm which introduced it. It stands to reason that they, more than any one else, will be interested in keeping a pure, high-grade stock of that particular thing.

As to varieties: "Circumstances alter cases." The variety that is best for the market gardener may not be best for your kitchen garden. A sort that is best for a late, heavy soil may be quite the reverse for a light, sandy one. The kind that is best for your neighbor Jones, living next door, and with the same kind of soil, may not be the best for you, because his tastes are likely to be different from yours.

Nevertheless, until you have proved for yourself otherwise, you will do well to start out with those sorts that have proved generally satisfactory over a wide area. The following varieties may be had of most good seedsmen, and are listed here as illustrative; there are others all equally as good, and under certain conditions may be better.

ASPARAGUS — Palmetto and Giant Argenteuil are both fine sorts for quality and yield.

BEANS — Of these there are several distinct types; of the earliest or string beans, Stringless Green Pod is one or the best; only enough of this type for the first two or three pickings, however, should be planted, as the wax beans can be had to follow in close succession and are superior in quality — Rustproof Golden Wax and Brittle Wax are two of the best of these. For use during late summer and fall, Old Homestead and Golden Cluster or Sunshine Wax may be used to take the place of the green-pod and wax dwarf varieties, thus saving a good deal of space. A few poles of each will be sufficient for the average sized family. Of the dwarf limas, Burpee's Improved is the most satisfactory I have used, and Early Leviathan and Giant Podded Pole are the best of the climbing limas.

BEETS — Early Model and Eclipse are practically as early as Egyptian and are better in quality; I like the former the better of the two. For summer and fall crops, Crimson Globe and Columbia are good, being of fine quality, in spite of the fact that they attain a large size.

BRUSSELS SPROUTS — This is a member of the cabbage family which should be more universally grown; its quality is finer than that of any cabbage. Dalkeith is the standard sort; but Danish Prize is fully as good in quality and a little larger.

CABBAGE — By a little more care in the selection of varieties, this should be had in every home garden all the season through; it is usually planted so that there is a surplus of it in early summer, and then no more before the fall crop. To secure a succession, set out a few heads of Jersey Wakefield and a sufficient number each of Copenhagen Market, Early Summer and Succession, all on the same date. Plant a package each of Early Summer and Succession from seed at the same time. At about the middle of June, sow a package each of Danish Baldhead and Drumhead Savoy — in this way, by the setting of plants and the two plantings of seeds, you should have cabbage from June until April.

CARROTS — While the early varieties mature sooner than the summer sorts, some of the latter are usually big enough to use as soon as the early kinds are ready. Therefore, for my own use, I plant only Chantenay and Coreless.

CAULIFLOWER — Snowball or Best Early (both the same type) and Dryweather, set out from plants in the spring, and sown in June to transplant later for the fall crop, will give you cauliflower for several months.

CELERY — Golden Self Blanching for the early fall use and Winter Queen for the late fall and winter supply make an entirely satisfactory combination.

CORN — The varieties of sweet corn are legion. Golden Bantam for first early (and if you like it as well as I do, planted again for mid-season and for late), Metropolitan or Howling Mob for second early, and White Evergreen for late are the sorts that I use to furnish a succession of fine table quality.

CUCUMBER — I now plant only Davis Perfect, which answers equally well for early and late, for slicing and for pickling.

EGGPLANT — There are only a few sorts, of which I prefer Black Beauty.

LETTUCE — This delicious salad should be had from Decoration Day to Thanksgiving, but in order to do this, you must suit the variety to the season. For early spring use Grand Rapids (loosehead) and Wayahead, planting about April 10th both plants and seeds. On May first, Big Boston, Deacon and Iceberg, or New York, which will be ready for use in the order named. (Sow the seed thinly, and thin out plants as soon as well started.) June first, Salamander and Iceberg; and the middle of July to August first, in a shaded place where water can be given, Grand Rapids, Wayahead and Big Boston for late summer and fall use, transplanting the latter to where some protection can be given with meadow hay or with frames when freezing weather sets in. The small headed Mignonette is unexcelled in quality and can be grown in spring and fall.

MELONS—Of the many muskmelons for the very limited space in the home garden, Netted Gem (or Rocky Ford) and Emerald Gem, a fine quality salmon fleshed sort, will be found as good as any. Last year there was introduced the first of a new type, Henderson's Bush muskmelon, and while it is of good quality, it has the distinct advantage of growing in a compact, bushy form.

MELONS, WATER — Of watermelons, Fordhook Early and Halbert Honey are the best in quality of the sorts which are early enough to ripen in the cooler sections of the country.

PEAS — Of peas there are a many good varieties. If you have the room, time, trellising and so forth, you can select varieties that from a single planting will give you succession crops for several weeks. But the method I prefer is to make two or three separate plantings during the spring, and another in August, of an early and a medium early variety. If you are going to use brush or trellis, Gradus and Royal Salute, which are unequalled in quality, will be a very satisfactory combination;

PEPPERS — A few plants each of Ruby King and Chinese Giant will give you a long and abundant supply of the best peppers you ever ate.

RADISHES — Radishes, to be had in the best of quality, should be planted every ten days, or two weeks at the most; use Crimson Globe and White Icicle for spring, and Chartiers or White Strasberg for summer. The early varieties can be planted again in the fall for a late supply.

SPINACH — In place of spinach, I now use exclusively Lucullus Swiss chard which gives a supply of greens from one sowing all summer long until frost. Of the true spinaches, Victoria is the best in quality.

SQUASHES — These require so much room and are so easy to buy that where space is limited it does not pay to raise them in the home garden, especially for fall and winter use. Bush Fordhook and Delicata are two excellent varieties, however, for summer use, and any fruits that are left over are good for storing for winter.

TOMATOES — If you have room for only one sort, make it Bonny Best; the quality is as good as any of the late sorts and the fruits are of good size. If, however, you have room for two varieties, try Dwarf Giant or Matchless or Globe for the second. Ponderosa is of the best quality and size but a bit "miffy" and apt to make irregular shaped fruits.

TURNIPS — Turnips are in bad repute largely through the fact that they are usually sent to the kitchen only after they have reached a stage of development which makes them fit only for the cattle.

Vegetable	*No. Rows*	*Lineal ft. of Row*	*Amt. for each 50 ft.*	*Amt. to order*
THE STAYERS — A SINGLE PLANTING OF EACH				
Asparagus	1	50	50 p.†	1 pkt.
Beans, pole	½	25 (6 hills)	1 pt.	1 pkt.
Beans, lima	½	25 (6 hills)	1 pt.	1 pkt.
Brussels Sprouts	½	25 (18 p.)	35 p.	1 pkt.
Celery	2	100	100 p.	1 pkt. each, 2 varieties
Cucumber	½	25 (5 hills)	¼ oz.	1 pkt.
Eggplant	½	25 (12 p.)	25 p.	1 pkt.
Leek	1	50	½ oz.	½ oz.
Melon	1	50	¼ oz.	2 or 3 pkts.
Onion	6 (-10)	300	½ oz.	2 oz.
Parsley		12 p.	½ oz.	1 pkt.
Parsnip	3	150	½ oz.	1 oz.
Pepper	½	25 (12 p.)	25	1 pkt.
Potatoes	2 up	100	½ pk.	1 pk.
Salsify	2	100	½ oz.	1 oz.
Squash	½	25	¼ oz.	1 pkt.
Tomato	1	50	12 p.	1 pkt.

Vegetable	*No. Rows*	*Lineal ft. of Row.*	*Amt. for each 30 ft.*	*Amt. to order*
THE REPEATERS — ONE OR MORE "SUCCESSION" PLANTINGS OF EACH*				
Beans, dwarf, greenpod,	1	50	1 pt.	1 pt.
Beans, wax,	1+1	100	1 pt.	1 qt.
Beet,	2+4	300	1 oz.	¼ lb.
Cabbage,	1½	75	25–35 p.	1 pkt. each var.
Cauliflower	½	50	25–35 p.	1 pkt. each var.
Carrot,	2+4	300	½ oz.	2 oz.
Corn,	4+4	400	½ pt.	1 pt. each, 4 var.
Kohlrabi,	½+½	50	¼ oz.	¼ oz.
Lettuce	1+1+1+1	200	⅛ oz.	50 p.
				1 oz., or 3 pkt.
Peas	2+2	200	1 pt.	1 qt. each, 2 var.
Radish,	½ each time	50	½ oz.	1 oz. or 3 pkts.
Turnips,	1+14+	300	⅓ oz.	½ oz. each, 4 sorts

*Figures in first column indicate number of sowings to be made.

†p. abbreviation for "plants"

Some Hindrances to Quality in Vegetables

SOMETIMES vegetables from our own garden are not as really delicious as we had thought they would be. While some soils seem to unfavorably influence the quality of vegetables, there are times when, with the best of soil conditions, disappointing results will occur. This may be due to weather conditions, or the use of fresh, strong manures. Lettuce is sometimes injured by the last named.

Such vegetables as radishes, spinach, head-lettuce, etc., that are tender and fine of flavor in the cooler temperature of spring or autumn, are inferior when grown during the heat of summer.

Observation seems to suggest certain causes of quality changes in vegetables:

Peas begin to lose their delicacy when they have reached full size; Flat Milan turnips when they exceed two and one-half inches in diameter and Purple-topped Globes when larger than three and one half inches in diameter.

A spell of dry, hot weather will make asparagus bitter.

Radishes are disappointing in heavy soil in a hot, dry situation. Light, rich soil and some shade make them crisp.

Carrots and chicory are not improved by being grown upon soil recently limed, and tomatoes, too, are sometimes injured upon such soil. Carrots are sweeter and have a milder flavor when grown in a light, sandy loam. Radishes and sorrel are always poor on this kind of soil.

Sorrel is less sour if not grown in the hot sun. Kale, Brussels sprouts and parsnips need frost to perfect their flavor.

Applications of potash immediately before cropping make beets less sweet.

Muriate of potash is injurious to potatoes, but sulphate of potash in proper proportion with other elements is helpful.

Rhubarb requires a rich soil to be of best quality, likewise melons and squashes.

Lettuce, onions, parsley, radishes, turnip are impaired or spoiled for the table by being allowed to go to seed.

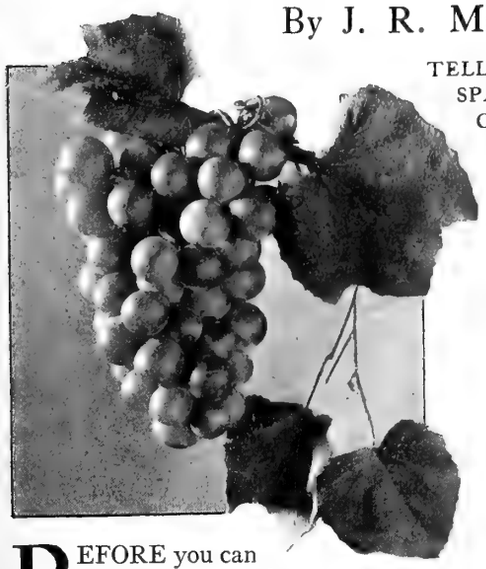
Melons are often of inferior quality because the seed has become crossed with cucumber, pumpkin or squash during the previous season's growth.

Edible quality must not be expected in French endive, dandelion, celery, sea kale, cauliflower, etc., until the edible part has been blanched.

New Jersey. M. R. CONOVER.

Choosing Fruits for Your Home Garden

By J. R. Mattern, Pennsylvania



TELLING WHAT CAN BE GROWN BEST IN SPACES OF LIMITED SIZE—A PRACTICAL HELP IN PLANTING FOR YOUR PARTICULAR REQUIREMENTS—HOW TO MAKE A BALANCED GARDEN

[EDITOR'S NOTE: *This is the beginning of a series of articles on the home fruit garden. Later numbers will deal more specifically with particular crops and varieties from the home view point.*]

BEFORE you can get very far in the actual plans for a home fruit garden you must have an adequate and accurate idea of what a home fruit garden is, its relation to your daily fare, its cost to you, and its value to you. The word garden in this connection misleads many people in America. A garden is not merely a cabbage patch, nor only a flower bed, but a place where you may grow all the good things you need that your climate and soil will permit. For myself, fruits form a larger part of my daily fare than vegetables, and I consume more fruits than flowers. My garden, therefore, is largely a fruit garden, and in addition to vegetables and flowers, it contains apples, peaches, pears, cherries, plums, grapes, strawberries and all the other berries.

How much of your garden should grow fruit and how much vegetables and poultry is a matter that involves diet and health. Undoubtedly some people do live on vegeables and grains and meats with fair comfort and satisfaction, but the diet that makes for a healthy body brim full of spirits and energy that may be made to count at work or play under the direction of the clear-seeing brain it carries is the body that is fed its due share of fruit every day in the year. Each day's fare for most people should include enough fruit to form a half to three-fourths of its bulk. Seldom will any person or family eat anywhere near this much unless it grows right handy to the kitchen door. To grow the proper amount in proportion to vegetables, fruit trees and plants should occupy eight or ten times as much ground as vegetables.

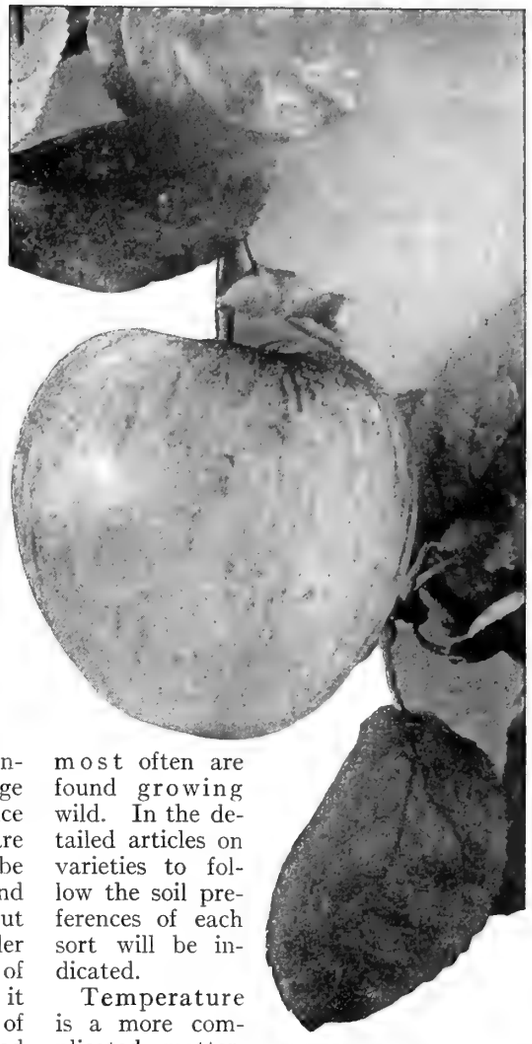
Each eighth acre fruit garden will cost from ten to fifteen dollars to set properly, and each garden so set and tended should produce for you not less than fifty dollars' worth of fruit each year, plus the added enjoyment of eating clean, flawless, fresh fruit that you yourself grew, plus a highly satisfactory gain in the health and spirits of your family if you have not been eating enough fruit, as almost invariably is the case where fruit must be bought.

Your climate and soil are the determining factors in the selection of the fruits and the varieties that may be grown in your garden. Right here I must point out that almost every known fruit will grow almost everywhere and produce to a certain extent, but to be worthy of planting in a home fruit garden, a variety must thrive and produce to its maximum *at that place. It must grow to its greatest perfection under your conditions.*

In my neighbor's garden there is a peach tree ten years old that never has yielded more than a dozen peaches. Another man in Pennsylvania has some orange and lemon trees which sometimes produce for him a few little green fruits. These are radical examples of fruits that should not be planted in those sections for their yields, and such fruits are easily guarded against. But other kinds of undesirable fruits are harder to avoid. For instance, with the kind of peach tree that yields three pecks when it ought to yield five pecks, and the kind of apple tree that yields fruit of fairly good flavor when it should yield fruit of the finest flavor, the weakness is not apparent without specific information. Such information is what this article, and others to follow, will give.

Since fine discrimination in the selection of what to plant is so vital to the proper success of our garden, let us get at the reasons which underlie the climatic and soil requirements of different varieties of fruits in order that we may classify and sort intelligently. It is almost a universal rule that varieties of fruits reach their greatest perfection *only* when growing where all the conditions are similar to those under which they originated. There are a few notable exceptions to this rule, such as Duchess and Yellow Transparent Apple, and Elberta Peach, but the rule holds good with a hundred varieties where it misses with one. The features of your garden which are covered by the term "conditions," are (1) soil, (2) temperature, (3) light, (4) water supply, (5) the purposes for which the fruit is wanted, and (6) individual preferences of the family.

There are three primary classes of soil — loam, clay and sand — and many different combinations of these. Most varieties of fruit have their preferences for one or another kind of soil. Yellow Newtown apple, for instance, reaches great perfection (and this is practically the only soil in which it succeeds) in a certain clay soil which tulip trees naturally prefer and in which they most often are found growing wild. In the detailed articles on varieties to follow the soil preferences of each sort will be indicated.

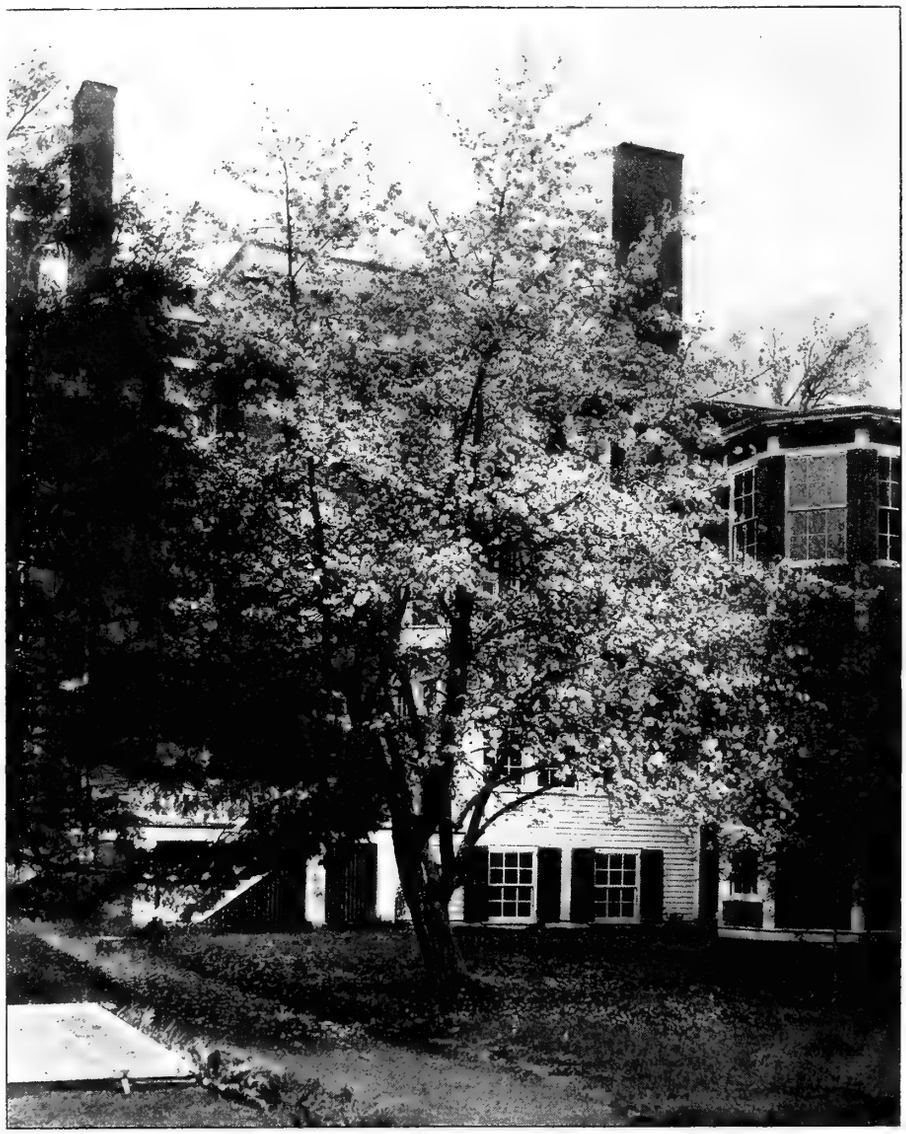


Temperature is a more complicated matter. It is the total heat of the season which counts in growing and ripening and coloring fruit, and latitude is the primary governor of this, as illustrated broadly by the differences of temperature of North Carolina and New York. But the effects of latitude quite often are changed entirely, so far as fruit growing is concerned, by altitude, by local topography, and by nearby bodies of water. Every five hundred feet of elevation above sea level equals in effect on the total heat of the season, the effect of one degree of latitude north or south from the equator. This means that every eight feet of elevation equals about one mile farther north.

The lay of your land, or its topography, has its influence through air-drainage. In every section where frost comes at all there are frosty nights after the growing season has started. If the freezing air can drain away from your land to lower levels, as it will if slopes and hollows permit, your fruit trees and plants will be surrounded by warmer air, and blossoms or young fruit will be safe. If your garden is located in a pocket or floor of a hollow or valley, then you may depend on any frosty air over all the surrounding watershed to collect about your trees. Nearby bodies of water also act to prevent late spring and early fall freezes, and they derive their potency from the power of water to hold its temperature longer than land. When there has been enough warmth to develop blossoms on trees,

the water has gathered considerable heat, and this heat is given off slowly during the nights when the temperature of near by land has gone below the freezing point.

Light also is a factor in the development of fruit, particularly of its coloring. Yellow and green apples, for instance, apparently ripen and color almost as well in partial shade or in foggy weather as in full sun, but red apples require full sun to become fit either to eat or look at. Do you have long or short seasons, clear or cloudy weather? The total amount of light in the season is the determining factor. The available supply of water affects the method of culture, and this must be considered in selecting varieties and fruits, for certain fruits demand certain methods of culture — peaches for instance, must be cultivated to succeed, and intensive cultivation is your best method of getting along with little water. Do you want fruit to cook, to eat raw, to can and preserve, to give or sell to friends, or for all these uses? The purposes for which fruit is desired is a vital determining factor in selecting what to plant. Many fine sorts are not suited to all purposes. Individual preferences of the family should be considered whenever possible under your conditions.



The small back yard with only one tree should be made to produce maximum results. Planting the variety best suited to the particular region is a good beginning

Climatic differences in endless multiplicity confront us in every valley and on every range of hills in the country. Since it obviously is out of the question to consider them all, for the purposes of these articles the eastern part of The United States and Canada will be discussed more immediately, and this section will be divided into three main "belts of climate." The southern climatic belt should include the south half of New Jersey and Delaware, eastern Maryland, Virginia and the states to the south of them. The middle climatic belt should include Long Island and southern New York, northern New Jersey and southern Pennsylvania, Ohio, West Virginia, Maryland, Kentucky, Tennessee, Southern Illinois, Indiana, Missouri, etc. The northern climatic belt should include all the New England states, New Brusnwick, Ontario, northern New York, Michigan, Iowa, Minnesota, etc. Throughout each one of these belts the conditions generally are hospitable to the same varieties and fruits, and the conditions in detail within each belt which differ and which must receive special attention in the selection of fruits are those resulting from differences of soil, topography, altitude and other features mentioned previously. Along the shores of Lake Erie, Ontario, and Michigan are regions in which peaches succeed in spite of the harsh northern latitude, while in the mountains of North Carolina are other regions where peaches fail in spite of the mild southern latitude.

Of course a home fruit garden may be of almost any size, and may contain one or many kinds of fruit. Those with but one or two kinds are the most common. They usually masquerade in the guise of trees growing in grassy yard or lawn, as does the garden of one man I know who planted peach trees and Pewaukee apple trees where there should have been an evergreen windbreak. Now he has neither fruit nor protection. While such a practice is better than to have no fruit at all, it is bad practice because under such conditions you never can get a reasonable yield from the trees. You waste opportunity. You had better plant your yard to grass and ornamentals, and dedicate a definite space for your garden, then give that ground proper culture for the fruit you plant in it. Even for the smallest gardens and though you may have but one or two trees or plants of a kind a complete list of all the fruits you can grow is better than fewer kinds, because the greater the diversity and the longer the ripening season of your fruits, the more valuable they will be to you. Yet the list can be shortened, a privilege which you must not think of using unless it is a positive necessity.

To bring the garden size question to a focus I shall arbitrarily decide on three sizes for home fruit gardens. The smallest shall be one-eighth of an acre, or about six hundred square yards. The limiting factor here is ground space — no more can be commanded. The medium sized garden shall contain a half acre, or about twenty-five hundred square yards. With it the limiting factors are groundspace and labor. It must not be forgotten that to grow good fruit takes work and time. The largest garden shall contain from one acre up, depending only on the capacity of the home for labor, and the amount of fruit that can be utilized. The plans for each of these gardens will be made to include a vegetable garden of proper proportionate size. With the foregoing explanations as a basis, the tables following name the fruits that average gardens in the Middle Climatic Belt should contain. One table for a southern garden also is shown, for comparison. The tables give the amount of each fruit that your garden should produce, in measured quantity and in money value. Trees and plants for these gardens should cost approximately for $\frac{1}{8}$ acre $12 to $18.00; for a one half acre $40 to $50, and for an acre but little more than the latter.

Northern gardens usually must do without peaches and blackberries, and, unless the particular location is well protected, without quinces and cherries. The space occupied in the more southerly gardens by

these fruits should be filled in northern gardens with additional strawberries, grapes, and apples. In the southern climatic belt dewberries, loganberries and apricots should be included, while raspberries are not so much at home and largely should be eliminated. If the garden location is particularly exposed to wind and cold, or is made a frost trap by surrounding elevated land, plant only the very hardiest fruits, such as apples, pears, currants, strawberries, and raspberries. The number of trees and plants specified in the lists will not crowd the space called for; on the contrary they will fill it rather sparsely, and can be set without putting them very close together.

ONE-EIGHTH ACRE GARDEN — SOUTHERN CLIMATIC BELT

Fruit.	Quantity	Crop	Value
Apples (dwf.)	4	6 bu.	$ 12.00
Peaches	6	3 bu.	6.00
Pears (dwf.)	2	2 bu.	3.00
Cherries	1	20 qts.	3.00
Plums	5	2 bu.	4.00
Quinces	1	2 doz.	.50
Apricot	2	25 qts.	1.50
Currants	4	16 qts.	1.60
Gooseberries	6	30 qts.	4.50
Strawberries	100	200 qts.	24.00
Blackberries	8	40 qts.	4.00
Grapes	8	100 lbs.	3.00
			$ 67.10

ONE-EIGHTH ACRE GARDEN — MIDDLE CLIMATIC BELT

Fruit.	Quantity	Crop	Value
Apples (dwf.)	10	15 bu.	$ 30.00
Peaches	4	2 bu.	4.00
Pears (dwf.)	2	2 bu.	3.00
Cherries	2	40 qts.	6.00
Plums	4	50 qts.	3.00
Quinces	1	2 doz.	.50
Currants	4	16 qts.	1.60
Gooseberries	6	30 qts.	4.50
Strawberries	100	200 qts.	24.00
Grapes	4	50 lbs.	1.50
Blackberries	4	20 qts.	2.00
Raspberries	8	20 qts.	2.50
			$82.60

ONE-HALF ACRE GARDEN — MIDDLE CLIMATIC BELT

Fruit.	Quantity	Crop	Value
Apples (some dwf.)	30	50 bu.	$100.00
Peaches	15	7½ bu.	15.00
Pears (some dwf.)	8	8 bu.	12.00
Plums	6	78 qts.	5.00
Cherries	6	120 qts.	18.00
Quinces	3	6 doz.	1.50
Currants	20	80 qts.	8.00
Gooseberries	32	160 qts.	24.00
Strawberries	250	500 qts.	60.00
Grapes	20	250 lbs.	7.50
Blackberries	10	50 qts.	5.00
Raspberries	30	75 qts.	9.00
			$265.00

ONE ACRE GARDEN — MIDDLE CLIMATIC BELT.

Fruit.	Quantity	Crop	Value
Apples	30	180 bu.	$270.00
Peaches	40	15 bu.	30.00
Pears	10	10 bu.	15.00
Cherries	10	200 qts.	20.00
Plums	15	8 bu.	16.00
Quinces	10	20 doz.	5.00
Currants	25	100 qts.	10.00
Gooseberries	100	200 qts.	30.00
Strawberries	300	600 qts.	72.00
Blackberries	60	300 qts.	30.00
Raspberries	40	80 qts.	12.00
Grapes	20	160 lbs.	5.00
			$515.00

Obviously the yields mentioned must be based on the crops of trees that are at least semi-matured. Apple trees should produce the quantities stated when they are six years old, and may produce them when five years old, though some varieties will need several more years to yield these quantities in a season. Peaches, plums, grapes, apricots, currants, and gooseberries should be given three years in which to reach the yearly production called for, while the other fruits begin to produce the stated quantities sooner. The amount of fruit yielded from the garden during the first two or three years can be increased by planting quick-bearing berries between the trees. Indeed, by this method the total crop of fruit, measured by money value, can be made as large the second season as at any season afterward. The space between the trees always should be utilized for growing something; if not berries then vegetables.

One question brought up at the beginning of this article has been partly answered only: What is the value of a home fruit garden? A man who is an authority on real estate and financial affairs told in THE GARDEN MAGAZINE last summer that the money value of real estate, the amount which experts judged it to be worth and at which it usually sold, is $1000 for each $50 it earns. On this basis a home fruit garden is worth from $5,000 to $8,000 an acre! But it is worth even more than its mere money value in the improved health of the family.

The real garden grows fruits, flowers, and vegetables in conjunction, according to the requirements of the individual family; but no home garden should be without its quota of fruit trees and berry bushes

A Sunken Seaside Garden — By A. Raymond Ellis, Connecticut

THE problem presented in making a garden for Mr. Hess on the south shore of Long Island was not an unusual one, and the solution given below may be of help to others. The space was simply a flat stretch near the shore and the soil sandy. There was no relief or variety of contour yet it was felt that some break in the even surface was necessary.

It was a question where to obtain, at slight expense, sufficient earth to grade so large a piece of land, as the term "dirt cheap" no longer applies anywhere in the vicinity of large cities and especially New York.

Looking from the piazza across the lawn. the sunken garden is seen and beyond it a glimpse of water works well into the distant view. Honeysuckle is growing on the posts

It seemed to me that the desired result could best be accomplished by building a garden about in the centre of the plot, slightly depressed, using the earth thus obtained to raise the level of the ground between it and the creek. It was planned to make this depression 18 inches deep but we found that a 12 inch depression was quite sufficient and now that a hedge is planted around it the effect of depth is increased. From the level of the garden the banks forming the sides are sloped up to the surrounding lawn at an angle a little less than 45 degrees. The hedge is planted around the edge at the top of this bank, clearly defining and accenting the garden. Drainage would have entered into this problem if the land had not been so sandy that it rapidly absorbed any rain that fell. It then became but a matter of constructing walks, beds, walls and the various garden features from time to time to complete the scheme which was first completely worked out by plans and details.

A concrete wall about 6 feet high was built along the entire length of the garden on the north (street) side, which afforded privacy and protection and a background for vines and flowers on the garden side, as well as to catch the dust from the street side. The effect of seclusion was increased by a row of well proportioned trees. On the opposite side the view to the water is left open. The house was also well shaded, but with the proper amount of air, light and shade. In planting trees you must consider them as a pyramid or triangle of foliage and shadow resting on its base. This shade increases and decreases in length according to the position of the sun during the day and as these shadows lap over one another or envelop the house is the proper proportion of air, light and shade maintained. The foliage about the house must not be so dense as to interfere with the air currents in hot weather.

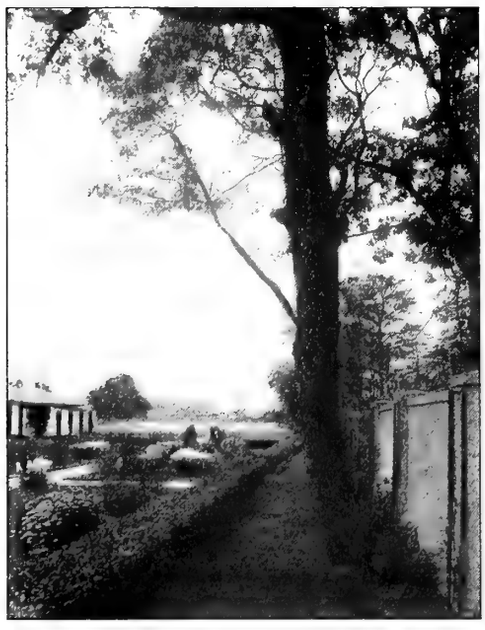
The form and shape of this garden is unsymmetrical, although hardly apparent — the plan being somewhat formal. From the piazza of the house, across the lawn, a view is obtained of the whole length of the property and looking into the distance beyond, adds greatly to the apparent depth. This view leads to the sunken garden.

Climbing roses are supported on trellises against the wall on the right (north side). Oaks and wild cherry beyond the wall

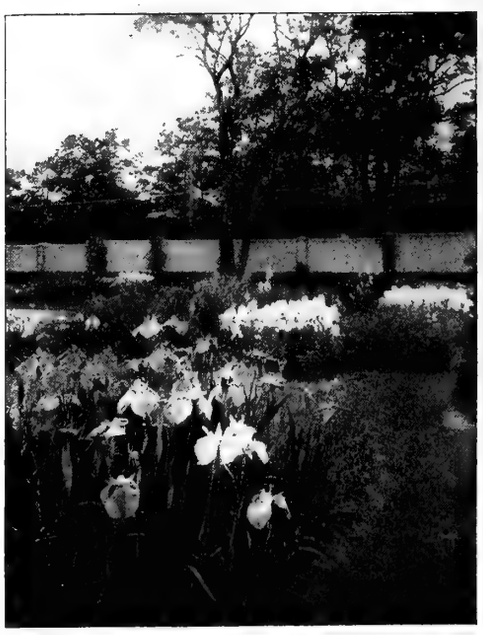
The garden is hedged with California privet and is laid out with regular shaped beds having grass walks around them. The centres are accented by ornamental shaped trees and shrubs, similar to those seen about old Southern homes and gardens and may be trimmed in various shapes. A few steps at the end of the central walk lead up to the garage driveway. Beyond this is the kitchen vegetable garden.

Considering the nature of most soil which like most others near the ocean, is more or less sandy and apparently affording but little nourishment or stability for plants to root in, the results have been most interesting. Some good loam from further inland was brought in for the flower beds, particularly the roses for which the soil was too light. Some well rotted manure was mixed in and the small amount of sand seems to be of little consequence. The vegetable garden seems to have thrived on the natural soil, largely due to the underlying moisture. Mr. Hess charted his garden and has made accurate observations on the behavior of the plants. Those that have taken hold best are the following, planted in the autumn of 1911.

Blanket flower, blazing star, campion, candytuft (perennial), cornflower, evening primrose, false chamomile, false dragonhead, foxgloves, gas plant, German iris,

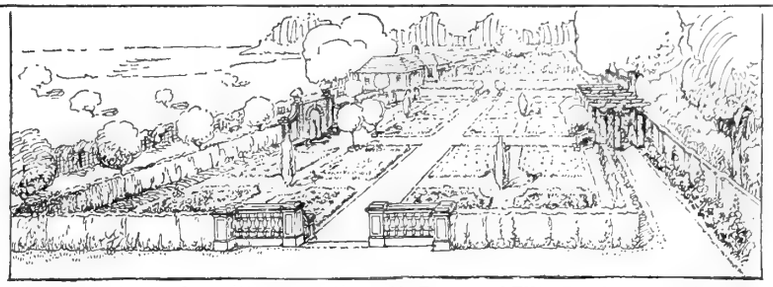


The sunken garden is framed by a low privet hedge and the whole is surrounded by a grass walk



Japan iris and perennial phlox in large masses of one variety give rich bloom in summer

hollyhocks, horse mint, Japanese iris, larkspur, lemon lily, moss pink, New England aster, Oriental poppy, phlox, platycodon, *Pyrethrum roseum*, rose mallow, *Salvia azurea*, shell flower, sunflower, sweet William, tawny lily, tickseed, yarrow, and several varieties of grass, like *Erianthus Ravennae*, eulalia etc.



Plan of the garden with perspective. (A. Raymond Ellis, Landscape Architect

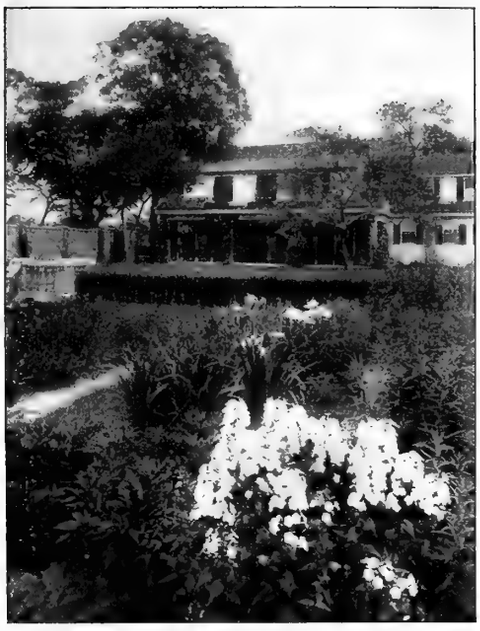
Those that have done fairly well are: Cone flower, goat's beard, peonies, speedwell, stonecrop, Stoke's aster, tufted pansy.

Those that have not done at all well include: Cardinal flower, chrysanthemums, (red and yellow), fever few, forget-me-not, Iceland poppy, leadwort, monkshood, peach bells, *Prunella grandiflora*, thoroughwort.

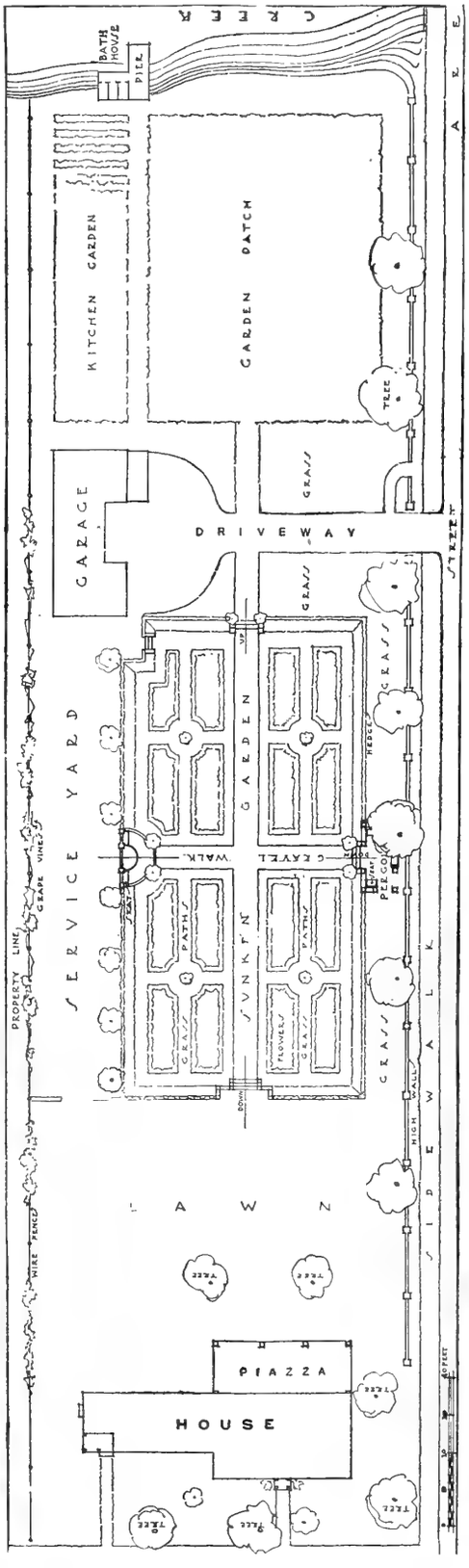
Most of these made some show the season following their planting, but succumbed the next winter, which, curiously, was unusually mild.

There are two or three points necessary to bear in mind in designing any garden. It must be protected and screened if near a street. If on a large estate it must be framed by trees to give a "setting" in summer and for the winter protection of its occupants. It should bear some relation to the house without being exactly attached to it. A vista should be obtainable from the house and it ought to contain objective points with the paths or walks so placed that they increase the perspective on these points. A garden should have a more or less formal entrance and sometimes an exit.

The limited area in this case and the lay of the ground prevented us from doing anything in the way of wooded vistas, but on large estates where part of the property is wooded, the site may be cleared; and from the sunken garden the property may be developed by maintaining natural vistas.



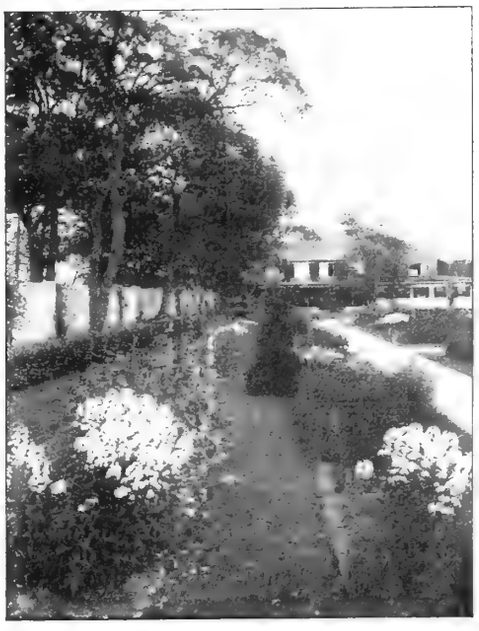
The sense of better elevation is given to the house when seen from the sunken garden



The Attic Cousin to the Garden

AS AN adjunct to the garden there are few "ready-made" accessories that equal the attic. One may make a rough bench on casters, and on it lay a strip of galvanized iron with the edges merely turned up by using a pair of five-cent pinchers, set boxes and tins there galore and have the beginning of a wonderful early garden. Mine is close to the attic tank that has the house supply of water, and into this we dip and water the plants at pleasure. Any surplus is caught by the sheet of galvanized iron and run into a pail. Severe nights call for the rolling back of the bench from contact with the glass. The warmth from the house makes a degree of heat in the attic that is almost unbelievable. Soil is readily hoisted from the ground into one of the windows. For planting we use old fish and vegetable cans that have been through a bonfire and lost their bottoms. These are set on the sheet of iron filled and planted. When the earth is warm enough, they are sprung open and the ball of roots planted where it can remain undisturbed. A dozen cans will make a family glad with sweet corn three weeks earlier than out-door planting; and tomatoes, cauliflower, etc., may be raised by the thousand for sale. These will do well if furthest from the light and turned occasionally.

Every builder of a house to live in will make no mistake if he puts in a more than usual supply of attic windows on the south and east sides. By exercising a little care, choice lettuce may be grown there during September and October and held after the growing period until late in winter as well as radishes, beets and even cucumbers. S. A. GEER



Long vistas are had in all directions and not too much formality is shown in the planting

Planting Table for Southern Flower Gardens — By Thomas J. Steed, Georgia

PREPARED FOR THE LATITUDE OF MIDDLE GEORGIA, AND SUITED FOR THE REGION OF MACON AND COLUMBUS, GA., AND FOR MONTGOMERY, ALA.

NAME	HOT BED	OPEN GROUND	DPT. TO COVER SEED (INS.)	DIST. BETWEEN PLANTS (INS.)	HEIGHT (INCHES)	FLOWERING PERIOD	LENGTH OF FLOWERING PERIOD (WEEKS)	WHEN TO THIN OR TRANSPLANT	SUCCESSIONAL SOWINGS	REMARKS
Ageratum	Feb.	Mar.	¼	12	16	May	10	2 inches high	May, July	Requires rich soil. Excellent for border.
Alyssum	Jan.	Feb.	¼	6	6	Apr.& May	16	4 leaves; when danger of frost is past	May or June	Fine flower for beds or boxes, and for hanging baskets.
Aster	Jan.	Feb.15	¼	10	12	May	4	4 to 6 leaves	Every 4 weeks until August	Prefers moist soil. Succeeds best in cool weather. Keep watch for plant lice.
Balsam	Feb.	Mar.	½	18	18	May	10	6 leaves	June	Easy to grow on rich soil, which they prefer.
Calendula	Jan.	Feb.	½	6	10	May	10	6 leaves; after danger of frost is past	June	Fine for cut flowers. Gives best result in cool fall months.
Carnation	Jan.	Feb.	¼	6	10	May	4	6 leaves	In May, and again in June and July	The Marguerite carnation produces flowers almost equal to hardy carnations when in rich soil.
Candytuft	Jan.	Feb.	¼	6	6	Apr.& May	4	4 leaves	Every 3 weeks until August	Excellent for rocky places and for borders, roadside gardens, etc.
Cornflower	Feb.	Mar.	¼	6	12	May	8	4 leaves	May; also in July and August	Beautiful old-time favorite easy to grow. Will reseed itself. Good for roadside planting.
Cosmos		Mar.	¼	18	48	June	12	Don't transplant	June 1st	Grows like a weed in the South. Probably the easiest of all annuals to grow.
Forget-me-not		Mar.	¼	6	6	May	8	4 leaves	May, July, and August	Excellent for bedding.
Four o'clock	Jan.	Mar.	¾	20	18-24	June	All season	6 to 8 leaves		Continuous bloomer; and if given good, rich sunny spot a single planting will furnish flowers the entire season.
Heliotrope		Apr.	¼	6	18	June	20	2 inches	June 1st	Give a rich, loamy soil to get best results, as plants are strong feeders.
Lobelia		Mar.	¼	6	8	June	4	4 leaves	Once a month until August 1st	Prefers moist soil and cool nights for best results.
Marigold	Jan.	Mar.	¼	12	8-24	May	12	4 leaves	June and August	Will grow anywhere. Keep weeds under control.
Nasturtium	Jan.	Mar.	½	10-24	10-48	Apr.& May	All summer	4 to 6 leaves	May, July and August 1st	Excellent flower for rocky places, or rock gardens. Does not require any special care.
Nicotiana		Mar.	⅛	12	48	June	4	4 leaves	Every 40 days until August 1st	Plant where it will get morning sun only.
Pansy	Dec. & Jan	Aug.-Feb.	⅛	4-6	6	Mar.	10	4 leaves		Keep flowers cut. Do not allow to seed, or they will not flower for ten weeks.
Petunia	Jan.	Mar.	1/32	12	12	May	10	4 leaves; after danger of frost is past	May or June	Handle with extra care; the weakest plants very often produce the finest flowers, more especially so with the double sorts.
Phlox (annual)		Mar.	⅛	6	8	May	8	4 leaves	June and August 1	Beautiful annual which should be more largely planted in South. Give it a soil rich in humus.
Pink, China	Feb.	Mar.	⅛	8	8-12	May	8	6 leaves	June and July	Old-time favorite which should again become popular. Will succeed in any garden soil.
Poppy	Feb.	Apr.	⅛	8	12	May	8	4 leaves; after danger of frost is past	Once a month until August	Give poppies a sunny spot and rich soil for quick growth.
Portulaca		Mar. & Apr.	1/16	12	6	June	12	6 leaves	June 1st	The double sorts are the most beautiful.
Rocket		Mar.	⅛	12	12	May	6	4 leaves	Every 60 days	A perennial. Gives abundance of bloom; but color not of the best.
Salvia		Mar.	¼	18	24	June	12	6 leaves	June and August	Salvia (scarlet sage) does not require over rich soil which increases foliage at the expense of the flowers.
Snapdragon	Jan.	Mar.	¼	12	12	May	20	March	June	Fine for cut flowers, as well as for borders.
Stock (ten weeks)		Mar.	¼	12	18	May	10	4 leaves	May and July	Does best in cool weather and moist soil.
Sunflower		Apr.	½	24-36	36-120	July	4-8	Do not transplant. Sow where plants are to grow	Every 40 days until August	Low double sorts are the most beautiful.
Sweet peas		Oct.-Apr.	1	4x24	24-48	Mar. & Apr.	4-6	Do not transplant		Sow in trenches 6 inches below level of soil. Work the soil up to plants as they grow.
Sweet William	Dec.	Feb.	⅛	6	12	Apr. - June	10	8 leaves	May and July	Keep flowers cut; they may last 20 weeks instead of 10.
Verbena	Dec.	Feb.	¼	12	12	Mar.-Apr.	8	8 leaves	May and July	Prefers soil rich in humus. Give sunny location.
Vinca	Mar.	Apr.	¼	12	18	June - July	12	2 inches high	June	Excellent for flower beds. Can be potted for winter bloom.
Zinnia	Jan.	Mar.	¼	12	18-24	May	12	March	June and August	Give a sunny situation and a rich, loamy soil

The Compost Heap.

A GOOD gardener guards his compost heap just as jealously as he would his finest flowers, well realizing how useless his best efforts would be without a good compost heap. There are several ways of preparing a compost and of course the nature of your soil would influence in a measure the formula. I always had fair results from the following, but there may be better methods.

Search around for a supply of good tough turfy sod that shows good growth, skin this off about eight or ten inches deep; place a layer of four inches of this soil to two inches of good well rotted manure, adding a liberal quantity of bone meal. Keep stacking up, making it narrower toward the top. If the heap was six feet across at the bottom it should be about six feet high, terminating in a rounded point. This turned several times (leaving it stand about three or four weeks between each turning) will be ready for use. I never added leaf soil to my compost but always kept it on hand to mix with the soil when preparing for my plants.—W. C. McC.

Rows planted across. Radish and lettuce, a good early combination

Cucumbers planted to occupy the whole space later

Rows planted lengthwise. Lettuce and radishes. The latter removed first

Planning the Work of the Hotbeds—By Albert E. Wilkinson, New York

REAL EFFICIENCY IN GETTING AHEAD OF THE SEASON—COMBINATIONS OF EARLY AND PERMANENT CROPS

IT IS not now too early to begin planning your hotbed. You must decide how many sash will fill your requirements. The heating material should be gathered together and all preparations made for the starting of the beds in March or by the end of February.

The plans here submitted are actual working plans which have proved successful, and can be adopted bodily or modified to fit your special requirements, which is far better.

First of all, set down on paper the vegetables and other things that you really need in early spring. For instance, lettuce, radish, beets, carrot, bunch onions, spinach. You can also plan to have the tender crops — tomatoes, cucumbers, melons, etc. — during June and July, and by transplanting from the hotbed maintain a steady supply all through season. A good deal can be gained by leaving some of these crops to mature in the hotbeds themselves which by the summer time, of course, will have degenerated into mere frames.

Plan I. shows a hotbed with the rows running the long way of the bed, north and south. The combination is radish and lettuce, sown March first to fifteenth. The radishes will mature in from seventeen to twenty-four days, if you are careful. The lettuce is thinned at that time, or before, so that it finally stands six inches apart in the row. The lettuce thinnings are very choice for consumption at that time and the larger plants will all be used up six weeks after planting at the latest.

Plan II. shows a succession if the plantings of No. I are used up quickly — in four weeks. Therefore this plan can be put into effect April first to fifteenth. The scheme here is to continue the lettuce harvesting season by transplanting a very few of the thinnings from plan one, into the first two rows of plan two, allowing the plants to grow and produce more and larger leaf surface or heads. Twelve good sized plants or heads of lettuce can be obtained.

Possibly the radish appetite has been somewhat satisfied by plan one, so in plan two only one row is grown. These radishes are obtained from seed sown in the row. A new vegetable spinach, is added, three rows.

The general garden scheme must be brought into consideration here, because it will be necessary to have certain plants ready for transplanting to the garden between May first and fifteenth in order to obtain the greatest efficiency from your garden. Six rows of plants transplanted into pots, are here shown. Paper pots as described later are used. The colder, hardier plants such as cabbage, cauliflower, kohlrabi and brussels sprouts are planned to be placed near the back of the bed, where the cold air strikes in ventilating the bed. These plants will not be so easily injured by a change in temperature, whereas the peppers, tomatoes and eggplants would be easily injured or checked if subjected to the same treatment. Therefore these latter plants are located nearer the centre of the bed.

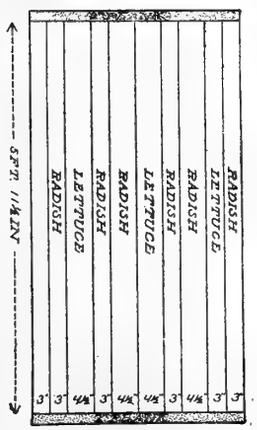
The plants for these pots can be raised in another hotbed, in a flat or box in the house near a sunny window, or purchased from near by greenhouse men. Other vegetables than these mentioned can be used according to your preference; clay pots, veneer boxes, strawberry boxes, or tin cans can be substituted for the paper pots.

The plants are allowed to grow here for from two to six weeks; then the bed is cleaned out and plan III comes into use.

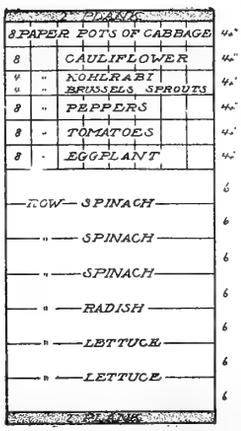
Plan III. The idea here is to have a main crop which will utilize the bed during the summer. I have chosen cucumbers; they should be ready for consumption in July and from then on. Radishes are to grow on both sides of the cucumber row, as they mature quickly and therefore would not interfere with the rapid growth of the cucumbers. Lettuce is planned for the middle of the bed, as it will utilize that space longer and grow until the cucumber vines demand the space. Melons or squash could be substituted for the cucumbers.

Plan IV. Here is another March plan: Both crops are of the same type (root crops), but the radishes are quickly maturing. The beets require more room for growth after a short time, the removal of the radishes will give this space. The combination is a good one as it places a constant crop in the bed for six to eight weeks, giving three table vegetables: radishes, beet greens, and beets.

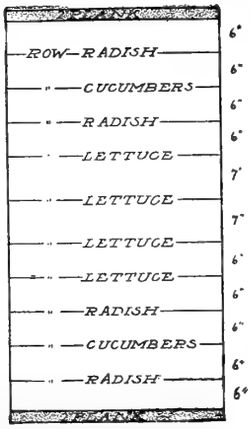
Plan V. The scheme shown here can follow on in the frame where Plan IV has been used; or you can start the hotbed with



I. A simple scheme. Radish and lettuce (March) for early salads

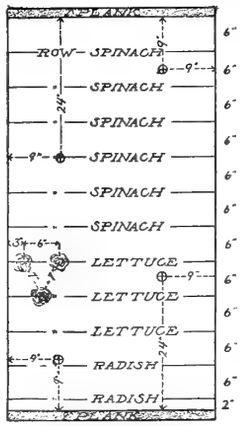


II. Succession plan to No. 1. and starting plants outside

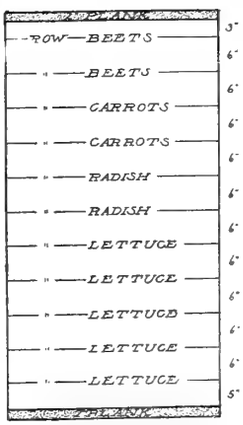


III. Succession to No. II with cucumbers as a summer crop

IV. Another simple plan for March. Root crops only are grown



V. Succession to No. IV and providing tomatoes for summer use



VI. For March, April or May, as a solitary scheme or succession

it. The main idea here is to have a constantly growing crop in the bed throughout the season. Four plants of tomatoes are placed as indicated by the X, and are so spaced that they will fill the bed completely when full grown. As they do not need all the space at first other quick maturing crops are grown with them in the bed. In this manner a supply of lettuce, radishes, and spinach is obtained from the bed while the tomatoes are growing, and are out of the way before the permanent plants require the space.

Plan VI. This is adaptable to March, April or May, either to start the bed or to follow some other combination of planting or to fill in, between two other schemes. It gives a variety of crops. The beets and carrots will require longer to grow than the radishes, therefore two crops of radishes can be grown in the rows indicated.

PAPER POTS FOR HOTBED SEEDLINGS

THE PAPER pot referred to on the preceding page is far better than the tin can as a plant pot because it gives drainage, which the latter does not. Paper pots are cheaper than clay pots and do not dry out as quickly. They are handier to use than sod or strawberry boxes. They offer many more advantages to the amateur, as you will soon find in practice.

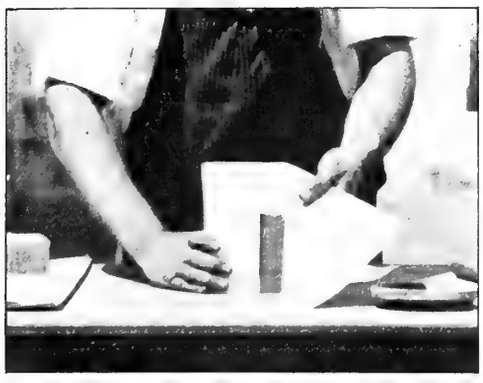
Paper pots are used for starting seeds in the early spring, growing seedlings for transplanting, and so on. These pots cannot be purchased, but paper of correct size may be bought for $1.25 to $2.50 per 1000 sheets or you can make them yourself out of strong paper. I use red building paper, but any other stout sort will do. Cut it into sizes 6 x 18 inches for a 3½-inch pot, and 6½ x 21½ for a 4-inch pot, other sizes increasing or decreasing according to diameter of pot.

The red paper may be purchased in rolls 3 feet wide, costing about 45 cents; each roll contains about 500 square feet.

Unseal the loose end of the roll, place it flat upon the table, and cut off the rough ends. A marker is now used. Any board six inches wide, and three or more feet long will do. Lay the board upon the paper, so that the edge will be at right angles to the edge of the paper. With a pencil make a mark along the side of the board which is toward the roll. Move the board ahead so that the mark is just at the edge. Then the other edge of the board will be six inches in advance, and a mark made down that edge will be parallel to the first. Continue the markings as convenient.

Cutting the paper along the marks, the strips (six inches wide and three feet long) need to be cut across, making pieces 18 x 6 inches.

It is necessary to have something upon which to make the pots, such as a form or block. If you are not handy with tools, get a carpenter to cut you a block of wood of the following dimensions: 3⅜ x 3⅜ inches square on the top, and about 3¾ inches deep. Have him bore a ⅜-inch hole clean through and exactly in the centre of the face of the block. Now get a blacksmith to set a flat-headed bolt in the hole, so that the head of the bolt is flush with the top of the block. The bolt must be at least two inches longer than the depth of the block, that is, not less than six inches long. A nut is to be screwed upon this protruding end of the bolt.



The start. Folding the sheet of paper around the fixed block

Take the block home, and set it up on the kitchen table or on the work bench. Bore a hole in the bench so that the end of the bolt may be inserted through it and the nut screwed as tight as necessary to make the block firm upon the work table. Complete your outfit by the addition of a hammer and a paper of tacks with large heads but small points, one and one-half or two ounce tacks preferred. For a right-handed worker, place the hammer at the right of the fixed block, a small stack of paper at the left, and a saucer containing some of the loose tacks at the right front.

Now to make the pots: Remove one sheet of paper from the stack and place it upright around the block, starting with one end half way across one of the side faces. The paper when wrapped around the block will lap several inches, so that the union will be good. Bend in, across the top of the block, two opposite sides of the free paper above the block. Do the same with the two remaining sides. Place a tack point down upon the topmost paper and about in the centre of the top surface. Tap it slightly with the hammer — a quick sharp rap is best — so that the tack point will be driven through the paper and clinched by striking the flattened top of the bolt. If too heavy a rap is given, the tack will cut through the paper and not hold properly.

The finished product should be a rather square pot with slightly rounding corners, especially toward the top. The bottom should be firm and flat and heavy enough to withstand the handling in filling, planting, and transplanting.

Good garden soil, or better still, well prepared, composted soil, should be used to fill the pots, care being taken to firm the earth slightly, either by hand pressure upon the soil, or by slightly raising the filled pot and letting it fall back upon the bench. With a small dibber or the finger a hole can be made in the soil and the roots of the seedling properly placed. Press the soil firmly against these roots, and have the soil surface level with the top of the pot. The seedling should be set in the centre of the filled pot and at the correct depth so that only the roots are below the soil surface.

Handling paper pots after they contain moist soil or are watered must be done with some care. Water causes the paper to become easily broken. When removing paper pots from a hotbed, a coldframe, or any other location where the pots have been resting upon the soil, the best practice is to insert the hand or a spade underneath the pot.

In transplanting, a hole as large as, or larger than, the paper pot should be dug, and the paper pot placed in this hole by hand. As the hand is underneath the pot, the bottom of the pot is easily torn off in withdrawing the hand, thus permitting the roots of the plant to penetrate easily the larger body of soil.

Place soil around the side of the transplanted plant and press firmly the whole. Among the plants that may be raised from seed elsewhere and transplanted into paper pots are:

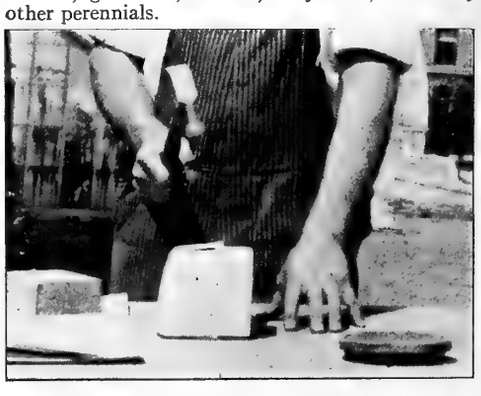
Vegetable plants: Tomatoes, cabbage, cauliflower, eggplants, peppers, kohlrabi, celery, onions, brussels sprouts, lettuce, parsley.

Flowering plants: Ageratum, antirrhinum, aster, balsam, calendula, campanula, candytuft, centaurea, chrysanthemum, cockscomb, coreopsis, cosmos, dahlia, dianthus, kochia, larkspur, marigold, mignonette, pansy, petunia, phlox, salvia, stock, sunflower, sweet William, verbena.

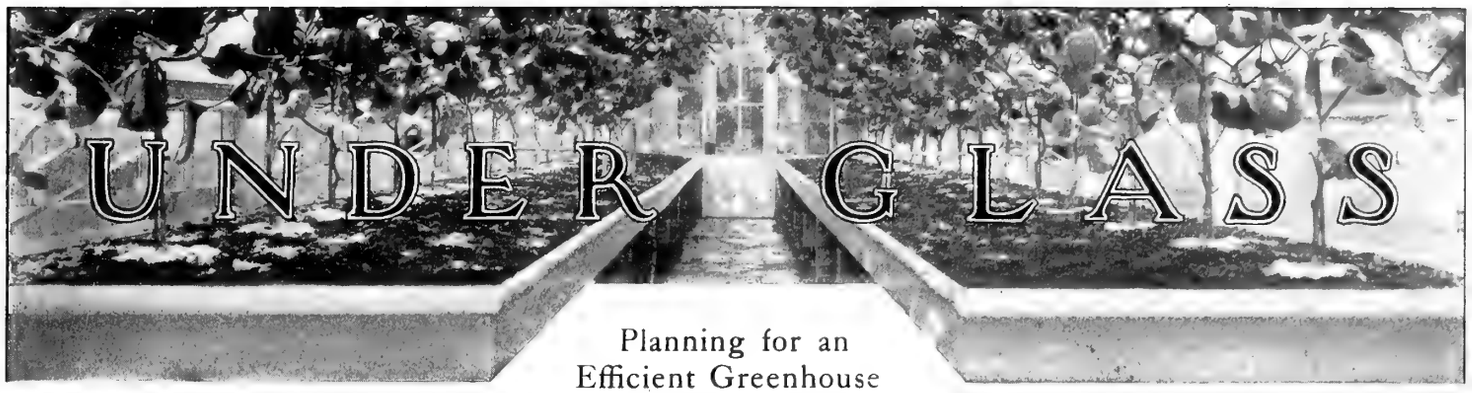
Some of the plants that can be grown from seed planted in the paper pots and transplanted later to the garden are:

Vegetable plants: Those mentioned above and the following vegetables not commonly transplanted: Sweet corn, string beans, cucumbers, melons, musk, water melon, squash, summer or winter pumpkins.

Flowering plants: Practically all the annual flowers; geranium, dahlias, hollyhocks, and many other perennials.



The finish. A tack is driven through the overlapped ends and the pot is ready



Planning for an Efficient Greenhouse

By W. C. McCollom

NEW YEAR'S is an excellent time to plan out the part to be played by the greenhouse in the coming season's activities. Don't wait until spring before making pledges for the garden.

The easy going, take-things-as-they-come sort of folks imagine the greenhouse to be a sort of mechanical sunshine shop that turns out products, without further care. Now this of course is not the case, and failure can always be charged up to bad management, not to bad luck, or fault of the greenhouse builder. A greenhouse, in the hands of a skilled man, is capable of producing results that would make the lackadaisical gardener shake his head in wonder; but the most peculiar part of the whole circumstance is the fact that the owners of some greenhouses are content with a sprig of parsley or poor shrivelled up aphis-eaten carnation flowers, when from the same greenhouse they could be gathering flowers or vegetables of the highest quality and in abundance.

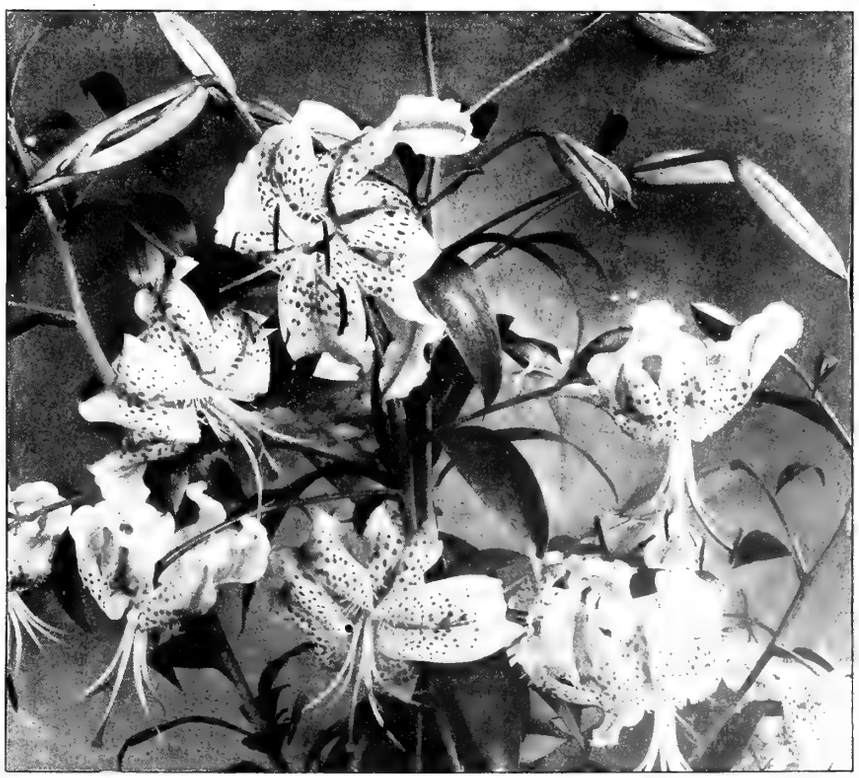
"Buy good seed" has become a slogan; I am a staunch believer in quality, not only in seeds but in plants or any stock, in fact. This principle holds with particular force in the greenhouse, as the plants there are subjected to unnatural conditions. Also see to it that you get the good *varieties*, too! It costs every bit as much to care for poor quality plants as it does to grow the best. The greenhouse must be cared for, the plants watered, and kept potted, good soil must be provided, heat must be given exactly the same in both cases. If you now have a lot of poor specimens, throw them out at once, and make a fresh start. Give your greenhouse a sort of overhauling, go through it carefully and ask yourself about each single plant "Does it give any returns?" "Is it worth the space it occupies?" Don't hesitate to throw away plants that do not measure up to the proper standard. A great deal of the dissatisfaction of an unproductive greenhouse can be charged up to having it half filled with old seedy plants that are necessarily unproductive and of no value. Good growers will have their greenhouses stocked from sill to ridge, every inch of available space will be occupied by good thrifty plants, every one paying its way, but no good grower will have a conglomeration of a lot of half dead and badly assorted plants. Weeding out right now will prove beneficial in many an overloaded greenhouse.

A friend who was about to build a small greenhouse replied to my question when asked what he intended growing, "Oh, peas, beans, lettuce, tomatoes, etc., and a mixed collection of flowers." "You can't do it in a one compartment house," I said. Whereupon he took exception, saying that all these plants grew together in his garden in summer. Many meet with failure on this rock. In a greenhouse you are working against nature and while there are not many plants the skilled hand cannot convert to his purpose, yet there are obstacles, such as temperature and atmospheric conditions, which make the successful growing of a large variety in one compartment a hopeless task. Yet this trying to crowd too much variety in one house is the greatest error of management the amateur makes.

A greenhouse should never be idle. Every day the year round should find it producing something. The house itself does not need to rest, and to allow it to stand idle for months is gross mismanagement. Start the year right by mapping out a plan that will keep your greenhouse busy.

One of the most important services of a greenhouse is to assist you in having better outdoor gardens, both as to flowers and vegetables. Through starting the various vegetables in the greenhouse, weeks are saved and quality is attained which is impossible otherwise. An unsupported vegetable garden is but a poor substitute for what it should be. The vegetable seeds are usually sown in pans and when large enough to handle are transferred to boxes or "flats" as the gardener calls them. As spring advances these young plants are gradually hardened off and when the weather is fit they are set out in the garden. The hardening off must be done gradually, yet it must be done thoroughly, as all will be lost by setting out soft sappy plants. On next page will be found a list of vegetables and the time for sowing. The time given for sowing seeds is of course not binding, sowing either side of the dates mentioned may be made to suit your particular requirements. You can also sow a second or in some cases even a third time for successional flowering with plants that flower in crops like the aster.

Things for the flower garden are started in much the same way as vegetables, but itis not always necessary to have so many "flats" as the young plants can be transplanted from the seed pans into one of the greenhouse benches. It is usually not necessary to prepare this bed especially; simply turn under the top of the



Lilies can be had at almost any season of the year by getting bulbs from cold storage and planting them in the greenhouse

Starting seedlings of vegetables and flowers for planting outdoors later is one way to bring the greenhouse into the efficient garden scheme

bed with a small hand fork and smooth it off.

VEGETABLE SEED SOWING DATES

French Globe Artichoke	Jan. 1st	Tomatoes	Feb. 15th
Leek	" "	Peppers	March 1st
Onion	" "	Eggplant	" "
Celery	Feb. 1st	Brussels sprouts	" "
Cabbage	" 15th	Lettuce	" "
Cauliflower	" "	Parsley	" "
		Herbs	" "

FLOWER SEED SOWING DATES

Begonia, tuberous	Jan. 1st	Stock	March 1st
Begonia, fibrous	Feb. 1st	Scabiosa	" "
Heliotrope	" "	Zinnia	" "
Lobelia	" "	Salvia	" "
Pansy	" "	Salpiglossis	" "
Castor bean	" "	Mignonette	" "
Aster, first crop	" "	Phlox (annual)	" "
Aster, second crop	March 1st	Ornamental grasses	" "
Antirrhinum	" "	Petunia	" "
Ageratum	" "	Chrysanthemum, annual	" "
Amaranthus	" "	Dianthus	" "
Sweet peas, in pots only	" "	Gaillardia, annual	" "
Calendula	" "	Celosia	" "
Verbena	" "		

After the flowers and vegetables have all been set out the greenhouse will be practically empty; that is the time for repairs. It is a mistake to leave this until winter, as the beds will all be filled and you can't ventilate sufficiently to remove the paint odors which are anything but beneficial to plant life. At that time also the boiler should be looked over; a good coat of kerosene painted on with a brush is very beneficial, after which, cover the outside of the boiler with a cheap grade of vaseline. This will keep it in excellent condition and prevent rusting. Contrary to general rules however I prefer not to dump the ashes but to have them remain in the fire box until the fire is started again in the fall.

During the summer there are a number of purposes for which the greenhouse can be used. Growing chrysanthemums for fall flowering is one of the most popular. These wonderful flowers are propagated from cuttings any time between March and June and can be grown on in pots or benches; pots are preferable for the small greenhouse as they allow shifting around to economize space. The chrysanthemum is a sure flower; by that I mean the amateur can handle it with impunity and have results.

Melons are also another summer crop for the greenhouse. They are sown in thumb pots during spring and potted on as required until they are in four inch pots from which they are planted in the benches. Hills are usually made about one foot across and about five inches deep. These hills are added to as the plants require more food. The plants are placed about 18 inches apart and trained to one stem, on wires placed about one foot from the sides of the house.

Another worthy purpose is to turn the house into a growing house to supply decorative plants for the dwelling. Young ferns can be started and grow very rapidly. A single season, under proper condition makes a good sized house plant from the small runners in spring. Summer flowering callas are also popular and are easily raised from bulbs planted in spring. Cold storage lilies and lily-of-the-valley are also largely grown, more especially for cut flowers. The fancy leaved caladium is very popular and it is bulbous and requires little attention.

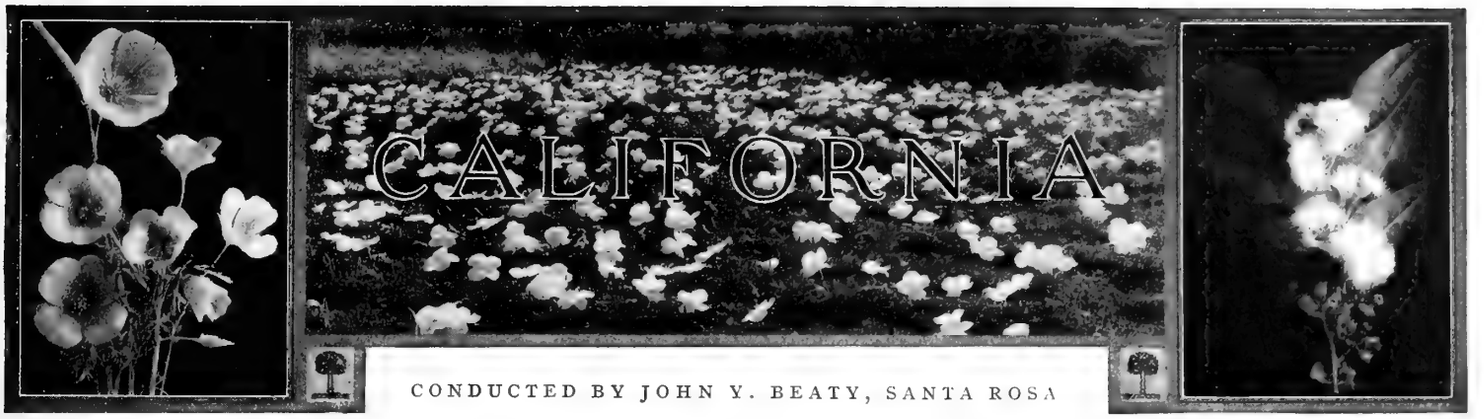
To the flower lover there is nothing finer than the gorgeous colored gloxinia. These can be secured in spring and the bulbs potted up.

If the greenhouse is to be devoted to roses that largely eliminates the possibility of any side crops. As the roses should be planted in May or June there are not many other purposes for which the house can be used because the roses must not be neglected to give the preference to any other crop that might be in the house. Other things can be grown, it is true, but they must abide by the conditions that the rose requires.

Fall finds the greenhouse a regular beehive. If carnations are to be the crop they must be brought in from out of doors and planted in the benches not later than the last of August; they can be planted much earlier than this in a well ventilated house. Carnations are not so exacting as the rose, and other crops can be raised with them. Snapdragons make a good companion crop; these are sown in April or May and carried along during summer in four inch pots.

Stocks are started during August and can be raised in succession crops to cover the entire winter. Mignonette, pansies and heliotrope can also be used in the carnation house, as can be also some vegetables, such as cauliflower, spinach, radishes, etc., but one of the best companions is the bulbs. Plan to procure them as early in the season as possible and buy the best; these can be planted in flats and buried; or stored in frames as suits best their requirements. Bring in and flower when the boxes are well filled with roots.

The Chrysanthemum is a good plant for the beginner's greenhouse. It is sure to flower in due season.



CONDUCTED BY JOHN Y. BEATY, SANTA ROSA

Flower Planting For California

AS A rule, every home has at least two places that need floral decoration — the house border and the fences and out-buildings. Flowers are needed around the foundation of the house to relieve the inartistic angle where the foundation meets the ground. They are needed on the fences and out-buildings because those structures are usually unattractive in themselves.

For the house border, three types of plant are demanded: tall plants suitable for the background; edging plants; and bedding plants intermediate in height between these.

One of the accompanying planting tables lists a very few of the best annuals, grouping them according to height. In two other tables are arranged the perennials grown from seed and those grown from bulbs or tubers. As a general rule, the bulbous plants have inconspicuous foliage that dies down after the blossoms have faded and this disqualifies them as border plants.

Of the bulbous and tuberous rooted plants the elephant's ear, dahlia, canna, calla, and bleeding heart are the principle ones available for the house border.

The dahlia and canna are perhaps the best of these because their period of blooming ranges over most of the season.

There is a longer list of background plants in the other table, all of which are good. We have used the dusty miller (*Centaurea Cineraria*) and the geranium, and never tire of the silvery white and the red and deep green combination. Both are evergreen here and thrive as well in winter as in summer.

Although the chrysanthemum is fine while in bloom and a little before, it is of little value the rest of the year. The same is true of hollyhock, four-o'clock, flowering sage, goldenrod, and larkspur.

For a more formal edging, use either the sea pink (Armeria) or the hen and chickens (Echeveria). The sea pink has an attractive little blossom that appears in profusion during spring and summer. The blossom of the echeveria is inconspicuous, however, and hardly worth mentioning. The armeria has a velvety green color and the echeveria has a silvery green hue.

Most of the perennials listed as border plants have a variety of colors so there will be little difficulty in producing a color harmony. If you use a variety of plants, don't be stingy with the seed for any one variety. Nothing spoils the border so much as a mixture of little groups of a dozen or more kinds of flowers. Divide the border into generous sections and plant each of these sections entirely to one variety.

If you prefer a more formal arrangement, set the different varieties in rows running lengthwise of the border, arranging the lowest growers next to the edge and the tallest ones next the background.

To my eye, there is nothing much more pleasing than columbine, with its graceful blossoms of nearly ever hue.

PERENNIALS GROWN FROM SEED

Name	TIME TO PLANT												Season of bloom*
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
For Bedding													
Chrysanthemum		x	x	x	x	x							F
Evening primrose		x	x	x	x								S F
Pansy		x	x	x	x			x	x	x	x		S F
Petunia		x	x	x	x								S F
Verbena		x	x	x	x								S F
Violet		x	x	x	x								Sp
Ageratum		x	x	x	x								Sp S F
Cineraria		x	x	x	x								Sp
Coleus		x	x	x	x								
Marguerite		x	x	x	x								Sp S F
Zinnia		x	x	x	x								Sp S F
Carnation		x	x	x	x			x	x	x	x		S F
Poppy		x	x	x	x								S F
Shasta daisy		x	x	x	x				x	x	x	x	S F
For Background													
Centaurea candidissima		x	x	x	x								S
Chrysanthemum		x	x	x	x	x							F
Geranium		x	x	x	x								Sp S F W
Hollyhock		x	x	x	x			x	x	x	x		S F
Four o'clock		x	x	x	x								S F
Salvia (flowering sage)		x	x	x	x								S F
Goldenrod		x	x	x	x								S F
Larkspur		x	x	x	x			x	x	x			S F
For Borders													
Snapdragon		x	x	x	x			x	x	x	x		S
Columbine		x	x	x	x				x	x			Sp S F
Campanula		x	x	x	x			x	x	x	x		Sp S F
Carnation		x	x	x	x			x	x	x	x		S F
Coreopsis grandiflora		x	x	x	x			x	x	x			F
Shasta daisy		x	x	x	x				x	x	x	x	S F
Foxglove		x	x	x	x			x	x	x			Sp S F
Lobelia cardinalis		x	x	x	x								Sp S F
Phlox		x	x	x	x			x	x	x	x		S F
Poppy		x	x	x	x								S F
Salvia		x	x	x	x								S F
Goldenrod		x	x	x	x								S F
Sweet William		x	x	x	x			x	x	x			Sp
Larkspur		x	x	x	x			x	x	x			S F
For Edgings													
Sea pink		x	x	x	x								Sp S
English daisy		x	x	x	x								
Forget-me-not		x	x	x	x			x	x				Sp
Shamrock (oxalis)		x	x	x	x								
Pansy		x	x	x	x			x	x	x	x		S F
Petunia		x	x	x	x								S F
Violet		x	x	x	x								Sp
Hen-and-chickens		x	x	x	x								

*NOTE.— The season of bloom is indicated by letters. Sp means spring; S, summer; F, fall; W, winter.

Canterbury bells (Campanula), with their white or blue blossoms, fit into most color schemes and always please.

Carnations require more care than some of the others. They must have their blossoms picked frequently or they will "rest," when they are little more decorative than a patch of dead weeds. They mass well, however.

Shasta daisy is a grand plant for the border. It blends well with other flowers, but perhaps is most often used alone. When a bed is once well started, blossoms cover the plants constantly from early summer till after most other flowers are gone. The plants spread very rapidly and are best when divided every other year. In starting with them, purchase the plants rather than the seed in order to get a quick result.

Foxglove is so tall that it is usually necessary to use it in the border where there is no other background plant. It does not blossom until the second year from seed. Grow several plants of each of the colors—purple, lavender, rose, and white — and be sure that they are not flanked on either side by plants that are much smaller. Because of its height, it is usually best to have the foxglove at the end of the border or in a corner bed.

You might plan for a few plants of the Oriental poppy (*Papaver orientale*) which has an exceptionally large flower. The sharp red of the petals is so startling that it is best to use only a few plants and to keep these toward the rear leaving the most conspicuous part of the border for blooms of more delicate hues.

Although there may be exceptions, it is a general rule that the house border should have a distinct background and a prominent edging.

As a rule, the larger flower beds should be on the border of the lawn or in the rear of the house. A generous lawn is first to be desired.

If you have room for bedding, don't be satisfied without some bulbs. The important point to consider in your planning of a bulb garden is the succession of bloom. The plants themselves are very unattractive after the flowers have faded.

By studying the table carefully it will be easy to plan for blossoms every month.

In January crocus and Roman hyacinths. In February, narcissus, Dutch hyacinths, *Ranunculus Asiaticus*, tulips, and a continuation of the plants that began to bloom in January. March brings the freesia, scilla, snowdrop, and bleeding heart. April opens the anemones; which continue through May. In June the first of the gladiolus appear, accompanied by the African lily, tuberous begonia, tigridia, *Amaryllis Belladonna*, var. *major*, and dahlias. The montbretia comes in July. Lily-of-the-valley opens first in August, and continues with others of the bulbs through September and October. November brings nothing new, but the dahlias and cannas are usually still in bloom. The year is rounded out by lilies in December.

ANNUALS

Name	Height (inches)	Color	TIME TO PLANT									
			Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
Abronia umbellata grandiflora	6–8	Rose	x	x	x					x	x	
Alyssum compactum	"	White	x	x	x	x				x	x	x
Godetia	"	Rose, white, red	x	x	x	x			x	x	x	
Lobelia	"	Blue	x	x	x	x						
Portulaca	"	Yellow, white, crimson, scarlet	x	x	x	x	x					
Verbena	"	Red, blue, white, pink	x	x	x	x						
Brachycome iberidifolia	9–12	Blue, white	x	x	x	x						
Centaurea	"	Yellow, pink, blue, white	x	x	x	x						
Mesembryanthemum crystallinum	"	White		x	x	x						
Calendula officinalis	12–18	Orange, yellow	x	x	x	x			x	x	x	
Annual chrysanthemum	"	Pink, red, white, yellow			x	x						
Calliopsis	18–23	All	x	x	x	x			x	x	x	
Papaver glaucum and umbrosum	"	Scarlet	x	x	x	x						
Bartonia aurea	24–30	Golden-yellow	x	x	x	x						

BULBS AND TUBERS

Name	PLANTING AND FLOWERING TIME*											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
For Bedding and Borders												
Agapanthus umbellatus	P	P	P	P		F	F	F	F	P F	P	P
Anemones	P	P		F	F	F	F		P	P	P	P
Begonia (tuberous)		P	P	P	P	F	F	F	F	F		
Crocus	P F	P F	F	F					P	P	P	P
Narcissus	P	P F	F	F					P	P	P	P
Freesia	P		F	F				P	P	P	P	P
Dutch hyacinths	P	P F	F	F						P	P	P
Roman hyacinths	P F	PF	F	F				P	P	P	P	P F
Lily-of-the-valley	P	P	P	P				F	F	F		P
Ranunculus Asiaticus	P	P F	F	F						P	P	P
Scilla			F	F					P			
Tigridia						F	F	F	P F	P F		
Tulip		F	F	F	F					P	P	
Montbretia		P	P				F	F	F			
Snowdrop	P	P	F	F						P	P	P
For Backgrounds and Massing												
Amaryllis Belladonna, major	P	P	P			F	F	F	P	P	P	P
Amaryllis Belladonna, minor	P	P	P						P F	P F	P	P
Amaryllis Johnsoni		P	P	P				F	F	F		
Caladium (elephant's ear)	P	P	P	P	P	P						
Dahlia	P	P	P	P	P	P F	F	F	F	F	F	
Dielytra (bleeding heart)	P	P	P F	P F	F						P	P
Gladiolus	P	P	P	P	P	F	F	F	F	F		
Japan iris	P	P	P	F	F							
Spanish iris			F	F	F				P	P	P	P
Ixia	P		F	F	F				P	P	P	P
Kniphofia (red-hot poker plant)	P	P	P	P		F	F	F	F	P F	P	P
Japanese lilies	P	P	P			F	F	F	F	P	P	P
St. Joseph lily						F	F	P F	P F	P	P	
Tiger lily	P	P	P			F	F	F	F		P	P
Easter lily	P	P	P			F			P	P	P	P
Calla lily	P F	P F	P F	F	F			P	P	P	P	P F
Canna		P				P	F	F	F	F	F	

*NOTE.— P refers to time when planting is to be done; F signifies the season of bloom.

GARDENING FOR YOUNG FOLKS

CONDUCTED BY ELLEN EDDY SHAW

A Look Ahead

EACH month, for a time at least, there will be on this page a calendar which will show at a glance the things which should be done in or for the garden. Explanations will be given, when they are needed; and if these seem not sufficiently clear, write to us and receive more explicit information.

The garden really has to be all thought out before planting, else one loses time. A plan should be drawn to scale showing just the size of it, beds in it, and what is to be planted in each. In considering plants, it is wise to start with those easiest of culture. Radishes, lettuce, beans, kohlrabi and onion, especially onion sets, are surely on this list. For flowers, nasturtiums, zinnias, scabiosa, sunflowers, castor oil beans, verbenas and sweet alyssum are easy to handle and all are fairly sure to give good results.

When some of these seeds are started indoors in flats, be sure to have the soil fine. It really should be sifted through a fine sieve. After the flat, a cigar box or any other low box is filled with soil, scatter the seeds over the surface and dust on a very little more soil. Extreme care must be taken in the watering of seeds planted so near to the surface. A piece of fine muslin placed over the top of the box breaks the force of the water when it is poured on.

Gladiolus bulbs (of the Colvillei varieties) may be potted now and forced inside for Easter bloom. The Bride is one of the best varieties to use. These bulbs, after potting, should be put in a cool, shaded place until the roots fill the pot, and then placed in full light. As the blossoms begin to form water once a week with liquid manure, about the color of weak tea. These bulbs do better when a number are planted together in a pot.

Of course the more one gardens, the more one really should know about the garden. For then it is possible to do so much more and do it with surety of success and with ease. The soil conditions can be controlled to a certain extent, while the conditions of light and moisture are not as flexible.

Soil has a mechanical and a chemical make-up. When you say that the garden soil is "light" or "heavy" you are speaking of its texture, or the mechanical side. If you make a statement to the effect that your plants are not growing well and you think they need nitrogen, you are speaking of the chemical side.

Some day look over the garden and just see what its appearance is. If the soil is heavy and soggy, or has dried out and huge cracks are visible, then it is too full of clay. These signs bespeak the presence of a surplus of clay. Suppose the soil is loose, falls apart easily, and is full of small particles of stone. Then the soil is a sandy one. If it is dark in color, rich looking and has leafy matter and twigs visible in it, say to yourself that you have a good loam, and one rich in humus. Humus comes from decay of vegetable matter and contains nitrogenous matter. A dark color is usually an evidence of humus in the soil.

Pick up a bit of soil in your hand; see if it will form into a ball or merely drop apart. Clay has the power to hold soil together; sand lacks this power. A soil may be too sandy or light; too clayey or heavy. So sandy soils need to be bound together, and soils too full of clay must be lightened so that their particles, when moist, will not squeeze so tightly together that air is forced out. Right here it is natural to say this: add sand or even coal ashes to lighten clay soils; add clay to bind together the particles in sandy soils. At the same time that one is thus improving the mechanical side of his garden soil, he ought also to improve its chemical or food value. What things add food elements to soils and also improve their texture? There is an ideal helper. It is rotted manure, which lightens heavy soils, adds body to light soils and gives to both plant food. Fresh manure may be rotted by piling it up on the garden plot, wetting it and turning it over as it heats. Later in the spring work it into the garden soil. Any portions still hot should be buried deep down so that they cannot come in contact with the seed or the seedling too early in its growth. A good garden soil should be light, but still able to hold water; heavy, but not so heavy that it is a soggy mass in times of rain. A soil dark brown in color has good plant food in it. That color is a mark of richness. Remember what black soil is in the forests. This color is the result of time during which carboniferous matter has slowly decayed, becoming finally an integral part of the soil. I have known boys who took long trips to swamps for black muck to work into their garden plots. This added body and food to gardens otherwise in poor condition; but muck soil needs lime added to sweeten it.

FERTILIZER CHART FOR THE HOME GARDEN

FOOD ELEMENT	SOURCES	AMOUNT PER SQ. ROD	WORK	FOOD FOR
Nitrogen	Manure Nitrate soda	2 or more inches thick 2 lbs.	Produces leaf growth	Cabbage, lettuce, spinach, celery, radish, tomatoes, squash
Phosphoric acid	Acid phosphate Bone meal	4 lbs. 1 lb.	Blossom and fruit former	Tubers, roots, flowering plants, beets, carrots
Potash	Kainit Wood ashes	1¾ lbs. Use all you can	Makes blossom and fruit (excellent fruit producer)	Small fruits, onions, flowering plants

School gardens with corn and tomato club contests are doing much to make gardens in West Virginia

School Exercises

GERMINATION. There are many ways to show the process of germination in plants. Seeds may be sprouted on damp blotters, in sawdust, cotton and soil boxes. Sawdust is an excellent medium to use when one desires quick results. Seeds may be pulled up out of the sawdust in any stage and put back without serious harm resulting. Use both corn and beans in this experiment and so have examples of both mono- and di-cotyledons. The corn starts with one cotyledon; the bean with two seed leaves which it holds on to, for nourishment, a long time. Note the first swelling, how the embryo pushes its way out, how long it holds its seed leaves, and how long it is before true leaves appear. Mark with indelible ink on the roots and see whether growth is from the tip or upper portion of the root. The sawdust should be moist all the time. The seeds may be rolled in a ball of damp cotton and sprouted in this. Or put a blotter on a plate, wet thoroughly, place seeds on this and cover with another moist blotter. The seeds will sprout very quickly if the blotters are kept wet all the time.

Seed testing. Seeds are tested by gardeners to find out how good they are. If seed is 70 per cent. good it is worth using in this work. Many boys and girls plant seeds too close together and so there are always plenty to sprout. In this test one hundred small seeds are used and fifty of large or

The garden at the State Normal School, West Virginia. It is used also by the summer school students.

medium sized seed. Sprout in damp blotters. Count the result after you believe all have sprouted that will. If eighty have sprouted out of one hundred lettuce seed, then that seed is 80 per cent. good. So percentages are worked out.

Garden plans. This is school work often neglected. We offer prizes for just this sort of work. It is important. Use dotted lines on the plan to indicate rows of seed, continuous lines for outlines, put points of compass and scale on the plan. Let this be a part of arithmetic, drawing, and spelling work.

The Garden Movement in West Virginia

HELP comes from above" is a saying which applies well to the garden movement in West Virginia. The mountain climate, and the short mid-winter term of school have made our elementary teachers hesitate to undertake this work, but our higher institutions of learning and our state agricultural leaders have shown the way.

Through the summer school which is attended by a large number of teachers of all grades from all parts of the state, the State University is setting standards in many kinds of school work. The classes in nature study, elementary agriculture, and school gardening are always large, hence much enthusiasm for this kind of work radiates from the summer school of our University. The accompanying picture shows the general University school garden. Sometimes a garden with plots for each student is used.

For the last two or three years, the State Board of Regents (which has charge of the six state normal schools) has been making a determined effort to turn the work of these schools ruralward whence comes their support. Quite naturally, normal school gardens have resulted. Three thousand normal school students, either observing or taking a part in this innovation, must have its effect on the schools back at home where about 225 graduates go to teach each year. Some of these normals have fall agricultural festivals when products from garden, field, and orchard are displayed and discussed.

The same Board has charge of two preparatory schools and two institutes for colored youth of secondary grade. In all of these institutions good work in gardening is done. These gardens add many fresh vegetables to the dormitory tables, serve as ornaments to the campus, make ideal laboratories for nature study, agriculture and some phases of chemistry and sociology.

The school system in this state is so closely organized that one part cannot be affected without the same influence, by a process of capillary attraction, reaching every other part. While we have no way of obtaining exact figures on this work from the elementary schools, we hear of the work "breaking out" in many parts of the State. However, it must be remembered that, until the school year is much lengthened or the time of the term changed, most of the garden work of pupils must be done at their homes or at school under vacation supervision.

In accordance with this sentiment, this state is planning to carry out a unique plan. We now have in West Virginia sixty-three district (township) superintendents of rural schools. These men are in position to keep in very close touch with the communities in their districts, and for that reason an effort will be made to provide an annual salary for such of these men as are prepared to lead in agricultural work. Plans for garden and club work and simple demonstration work can be organized during the school term and followed up by visits and social centre meetings during the long vacations.

About five thousand boys and girls are doing club work in corn and tomato contests in West Virginia. The College of Agriculture, in coöperation with the United States Department of Agriculture, has charge of this work. The county and district superintendents of schools and the teachers act as agents and turn this work to broad educational purposes. The Extension Division of the College of Agriculture has organized a good number of city garden clubs and recently held the first contest for these city gardeners.

While West Virginia cities have been somewhat backward in the garden movement, many of them have made good beginnings, as shown by the following facts from a report from Geo. E. Hubbs, the former superintendent of the schools of Moundsville, a town of 10,000 inhabitants. The first year this work was undertaken 3,600 packages of seeds (40 per cent. vegetable, and 60 per cent. flower seeds) were distributed to the pupils for home gardens. The second year the demand greatly increased and 6,500 packages were distributed to about 1,000 boys and girls. The children showed great interest and delight in this work, as they brought their flowers and glowing reports of big profits to school the following autumn. Some vacant city lots were used for garden purposes.

The following extract is from a report of L. J. Hanifan, Rural School Supervisor, and one of the judges of the prize gardens of Gary, W. Va.

Of special significance to educators and to all others who seek to serve their fellow men is the educative work done by the United States Coal and Coke Company, operating twelve mining plants at and near Gary, and employing a total of 3,200 men. These twelve plants are under the general supervision of Col. E. C. O'Toole, of Gary.

This company has for the past three years offered a prize of $10 for the best garden, and a prize of $5 for the best yard at each of the twelve mining plants. The Committee of Award this year was composed of Dr. E. A. Schubert, traveling and industrial agent of the N. & W. R. R.; Professor C. R. Titlow, of the College of Agriculture, Morgantown; Colonel Swope of the McDowell *Recorder*; and L. J. Hanifan. It was estimated that the total value of the gardens of these twelve plants is between $15,000 and $20,000. Many of the gardens were worth $100. The yards in many cases were very beautiful.

Charleston, W. Va. J. F. MARSH.
Department of Education.

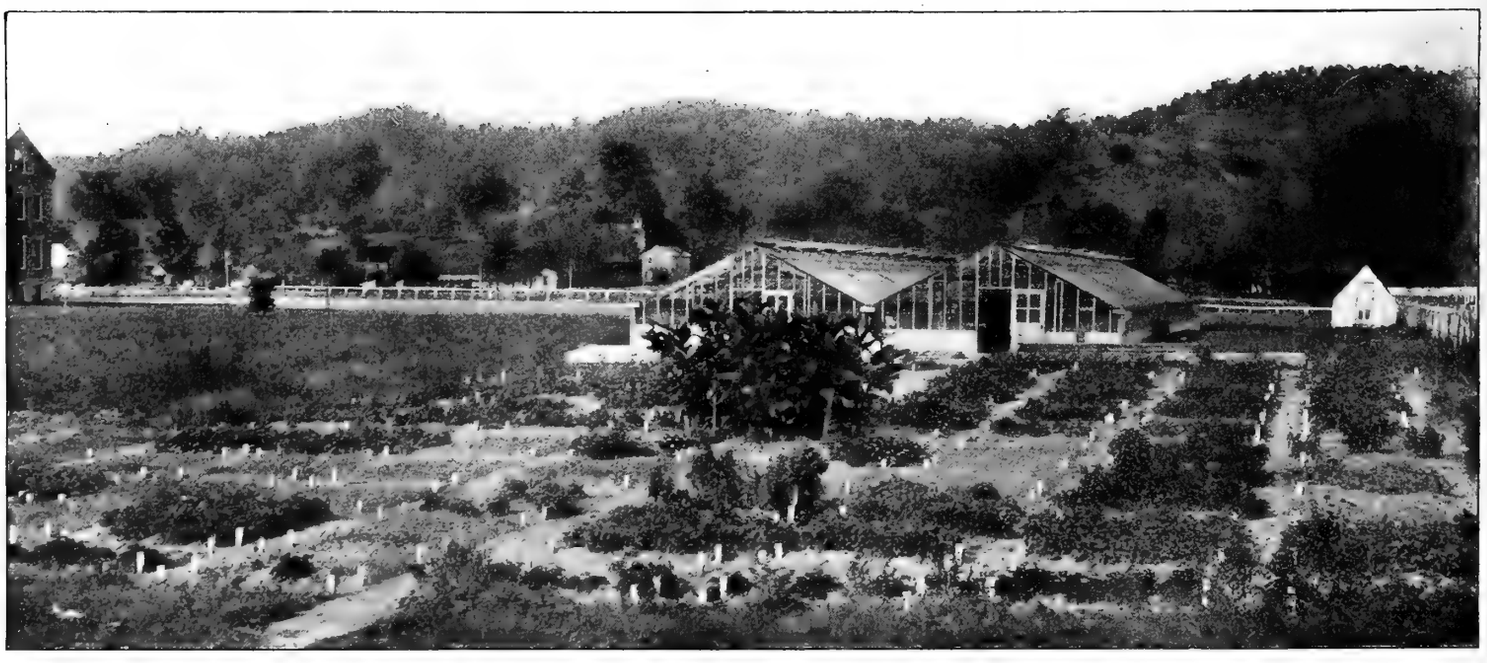
Monthly Calendar for Young Gardeners — January

1st Week 5–10. Send for a seed catalogue and start making out your order. Buy such seed now as you wish to start indoors for early plantings. Include seed of peas, sweet peas, tomatoes, carrots, radish, lettuce, onion, and pepper. Measure the garden plot and make a plan of it on paper. Show on this plan just where each sowing is to be. Look over your garden tools and repair any which need it. Make a coldframe for spring use. In odd times make some flats, stakes and labels for use later.

2d Week 12–17. Sow some seeds of onions, carrots and radishes in boxes. Put these in a warm place. If your mother's lawn is a poor one, scatter bone meal over it. Put on a handful to each square yard of surface. Get your garden diary ready and start it at once. Put in it all your expenses even the smallest amounts you pay for seed. Bring some of the pots of bulbs out of the dark and cold. Try forcing gladiolus in the house. Pot up some early variety like the Bride. Keep the house plants clean with frequent washings in clean, warm water.

3d Week 19–24. Lettuce may be started in flats. Sow garden peas in pots. These will produce an early crop. Sow sweet peas if you have a coldframe. Sow these in pots. Start a few pots of dwarf sweet peas and place in sunny windows. Make some sieves for soil sifting. Small boxes with the bottoms knocked out and replaced with netting will answer every purpose.

4th Week 26–31. Write to Washington for their bulletin on school gardens. In school garden work give lessons on germination, soils and seed selection. Have upper grades draw plan of school garden to a scale and mark out each grade's section. Hunt up literature on what other schools have done in gardening: e. g., Cleveland, Ohio; Portland, Ore.; Los Angeles, Calif.; Providence, R. I.; Yonkers, N. Y., and many other places.



The garden of the colored students. Seedlings are raised in the greenhouse for the outdoor garden

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Advantage of Deep Plowing

DEEP plowing is a distinct advantage in heavy soils inclined to be wet as it tends to better drainage about the roots.

The upper three or four inches of soil is worked as mellow as tools can make it. Beneath this the soil is compact, untouched by these lighter surface-working tools. We cannot afford to overlook this under soil. The line between the loose and the compact soil is defined in this way: When the plow is drawn through the soil its steel base leaves a smooth and rather hard line of earth at the bottom of each furrow and this is further compressed by the plowman himself as he walks in the furrow.

Naturally this plow pan, as it is called, is less favorable to root penetration than the soil above it and all the closely packed earth beneath passes up its moisture more rapidly than the raised or loosened soil above. The water from heavy spring rains soaks readily in through the loose soil above to this plow pan which on light, knolly sites acts something like a drain board and carries away more water than it should. Now if this plow pan is but 3 or 3½ inches below the soil's surface — the average depth made

Extent of tomato root in a light soil which has been deeply plowed. The plant can successfully withstand a prolonged drought

by a one-horse plow — the garden vegetables will tend to shallow rooting and the soil to unfavorable dryness if the rainfall is light. But if the plow runs deep, say 6 or 7 inches, as a two-horse Wiard or South Bend Plow will do, the hardened line of soil at the bottom of the furrow occurs at a more favorable depth with an important increase in the amount of loose soil. The vegetables will then root more deeply. Moisture drawn up from below is distributed through a deeper root zone, and fertilizing material which has seeped through from the surface soil by leaching is made available for the garden's use.

Showing how the plow share carries and folds under the remains of vegetable growth

This deep plowing should take place as soon as the soil is free of frost. Always consider the depth of the furrow from its land side and regulate the plow's depth by attaching the whiffletrees to a certain hole in the clevis at the end of the plow beam. When attached at the highest part of the clevis the plow runs deepest.

When plowing deep, level land should be plowed in strips either lengthwise or crosswise of the garden so that the furrows counteract any tendency of the surface to wash. If the plowing is done by following around the entire piece and finishing in the centre, the garden surface will tend to hollow in the center.

New Jersey M. R. CONOVER.

Depth of corn roots in deeply plowed land

Duties for Southern Gardeners

THIS is the month when seed catalogues begin to arrive. Give them your careful attention; they contain much valuable information and will keep you up to date on novelties. Try a few in your garden each season; one or two of them may prove of extraordinary value.

If you have not already done so, spread manure on the flower beds and spade deep so that the soil can be absorbing moisture and storing it up for the dry summer weather.

Sow some annuals in the hotbeds, and you will get flowers two months earlier than if you wait to sow them in the open ground.

Tuberose bulbs may be planted in the open in Florida and Southern Texas. Canna and dahlia roots may also be set out in these localities. Half hardy annuals may be sown in the open in Florida, as well as tender annuals below the frost line.

Continue to plant Iris. It is well suited to the Florida climate, as it is a great lover of moisture. It can be grown to perfection along the banks of lakes and streams, where it will become naturalized.

Sow more turnips, beets and radishes. Continue to set out cabbage plants and cultivate those that were planted out in November and December. Do this in the morning, after the dew has dried. Morning cultivation is best at this time of the year, as it gives the top soil a chance to dry before night. Frost is not then likely to do any damage as it might do if the soil was plowed in the late afternoon.

Seed of celery and cauliflower may be sown in well made hotbeds now, as well as onion seed, to be transplanted to the open ground in March.

Plant white potatoes now, taking time to make the soil loose and deep. Use stable manure and commercial fertilizer, and if possible cover the patch with wheat, oat straw, or pine needles to a depth of two or three inches. This saves cultivation and also protects from frost.

Clean up old orchards and prune out all bad limbs. This is the last chance for pruning grape vines, as well as for planting peach trees in the Lower South. Plant magnolias also; they are the best evergreen shade trees.

Strawberries may be set out in the Lower South any time during the month; and blackberries in the Upper and Lower South any time when the ground is not frozen. Firm the soil around the plants.

Put the tools in order. Gather up the manure and haul it out into the field. Save all that is possible; manure lasts several years in the soil while the effect of commercial fertilizer is dissipated in a year or two. Commercial fertilizer pays better, too, when used in combination with manure.

More oats may be sown now. Use one of the early sorts, such as Bancroft, Burt or Ninety Day.

Georgia. THOMAS J. STEED.

"Fancy" Potatoes in Boxes

BAKING potatoes, selected and graded for size and quality, wrapped in paper and packed 50 to 75 in a box, are now being sold in Chicago alongside of fancy apples, oranges and grape fruit. The stock is all of the white variety in Eurekas, Rurals, Carmens, and Raleighs. They average in weight from the minimum, three-quarters of a pound, to two and one-half and three pounds. The purchase from the growers' association is said to have been the largest single contract ever made for produce in that section of Idaho from which they were secured, and called for from forty to fifty cars of fine selected stock.

An inquiry of a Chicago dealer, as to the price, brought forth the following comment:

"We get $1.80 per box, and they are cheap at that. There are not less than fifty and from that on up to seventy-five good sound potatoes in each box. If you have ever had any experience in selecting baking potatoes from the usual run at market, you know that you will pick over three or four bushels and then not get three pecks of bakers. Picking out the potatoes suitable for baking leaves a large quantity to be utilized as hashed brown, French or German fried, or mashed. The result is, that while you may have plenty of potatoes on hand, those suitable for baking are soon picked out. But where they are put up this way you pay for

nothing but the choicest bakers, with absolutely no waste. True, you pay about three cents each for them, but you get ten cents each for them when served and your customer gets full value for his money.

"We sell them to the large hotel and dining-car trade. A dining-car buyer told me the other day that these bakers were cheap. He said that three out of five people, when ordering on a diner, called for baked potatoes and they had a hard time to get good bakers the year round. Another thing, he said the boy in the kitchen who prepared the potatoes generally picked out the big ones first and left the small ones. A hotel man told me he had the same experience with his kitchen help. But when they are put up this way there is no excuse for using them in any form but baked, and every man to whom I have sold appears to take a fancy to this way of handling them.

"Then there is another point about it: The sorting and picking over is all done away with, as well as eliminating the waste. The potatoes can be taken from the box as wanted and they are always ready for use. The box is of a size that fits in a

Selected "fancy" potatoes packed in boxes just like apples brought high prices in the large city markets

small space and that is an item, especially on a diner where the storage capacity is limited. Wrapping them in paper, while it adds to their attractiveness, also preserves them. In fact, the plan is quite in keeping with up-to-date methods and is thoroughly practical in every way."

Twenty cents per hundred weight above the local market price was paid the grower, for Cobblers and Eureka bakers the day delivered. Fifteen cents above the local price was paid for the other varieties. The potatoes were delivered to a large packing house where they were wrapped and packed in apple boxes for shipment. The boxes were produced by a local sash and door factory.

Another Chicago plan for marketing potatoes is in slat crates holding one bushel. These are for family trade. An inquiry as to the price of these potatoes, brought out the following explanation:

"We get $1.00 a crate. They are raised out in the Bitter Root Valley, in Montana, and weigh 65 pounds out there, but they net us here 60 pounds They're all selected stock and none weigh less than four ounces. The dealers in New York City get $1.30 per crate for them.

"We sold ten or twelve cars of them here in Chicago, to our best grocery trade, within a month after their arrival, and the trade always comes back for more because they find it economy. A dealer does not have to handle them at all. A housewife buys them because there is no waste and she has something that is tidy to keep them in. For that reason she gets a crate or a bushel instead of a smaller quantity done up in a paper bag. The crate will not take up much room in her kitchen and every potato is a good one, for all the sorting and culling is done where the potatoes are grown. It's the best method of handling we have ever seen; it's making a big hit here in Chicago and I understand it is well liked in New York."

Washington, D. C. JAMES E. DOWNING.

Conquering the San José Scale by Parasites

THE San José scale has been a serious pest in most orchards ever since its introduction to the eastern states a score of years ago. The only method with which orchardists have had to combat it is caustic or smothering washes which are disagreeable to apply, and now our Oregon friends are beginning to make claims for a strain that in a few years, will be resistant to the lime-sulphur washes. Some of the larger orchardists have considered the San José scale to be a blessing in disguise, for it is putting out of business the man who is too indifferent to spray.

But Nature has asserted herself, as she usually does, and is now counterbalancing things by calling upon some minute insect parasites to prey upon the scale and destroy it. Orchards that were being killed by the scale have now a chance to recuperate, and nurseries, in which the scale was so bad that the nursery inspectors would not give them a "clean bill of health," can now ship trees and shrubs because little or no live scale can be found.

It is no new discovery to science, for in 1906 the Bureau of Entomology published a long bulletin on the scale in which eight parasites were mentioned; and the late Prof. Johnson was quoted as claiming that a small area of Maryland had at least been temporarily rid of the scale. But it is in Pennsylvania that the big clean up is now taking place. For nearly three years Prof. H. A. Surface, State Zoölogist, has been making observations, and his inspectors have been reporting the work of parasites; but it has been only during the last year or so that the scale has been rapidly succumbing. With plenty of material to work upon the parasite has stealthily gained in strength, and it is now doing effective work in at least one-third of this state.

Where did the parasites come from? One species has been known for at least fifty years, and has been reported from various parts of the United States working on the oyster shell scale, and it has also been bred from the eggs of the tent caterpillar. Another species, and a far more common one in the material bred by Prof. Surface, was found and described comparatively recently by Dr. L. O. Howard of Washington. He found it working on the scale on the citrus fruits. Others of lesser importance have been found, and there have also been bred what are supposed to be secondary parasites — parasites of the parasites.

Because these helpful little insect cannibals are abroad is no reason why the man with fruit trees should throw away his spraying pump, or cease to boil lime-sulphur wash. That work should continue, giving the trees a dormant spray, unless the owner finds that the scale in his orchard or in his vicinity is full of holes. These parasites live inside the San José scale and when they have gone through the various stages necessary to become adults, they eat their way out leaving a very small hole which indicates that they have been busy consuming the scale.

In addition to these parasites the lady beetles feed more or less upon the young scales before they have protected themselves with their waxy scales. There is also a fungous disease which destroys some scale, but neither of these agencies has as yet appeared to be present in sufficient quantity to lessen the scale to a perceptible degree.

Apparently, as far as Prof. Surface has observed at the present time, the spraying with lime-sulphur wash does not kill the parasite so that if it is working in your orchard you need have no fear of destroying the microscopic friends.

These parasites can be spread easily by artificial means. All that is necessary is to take a branch from some tree known to have the parasites working in the scale and transfer it to infested territory. But do not be disappointed if the parasites do not clean up the orchard in a few weeks. It will take some time for them to become numerous enough in a new community to do effective work. In the meantime spray with lime-sulphur wash. Pieces of wood on which there are San Jose scale infested with parasites can be obtained from Prof. H. A. Surface at Harrisburg, Pa., by sending ten cents to pay for the postage and the mailing tube in which to transport it.

Pennsylvania. PARKER THAYER BARNES.

Unappreciated Ground Covers

ALMOST every one who sees my garden says: "What's that?" The plant that calls forth the exclamation is only one of those common plants that have become uncommon in the garden — the cypress spurge (*Euphorbia Cyparissias*). Nowadays it is more apt to be found by the wayside or in an old burying-ground. I guess it deserved its banishment from the garden, all right. Its cypress-like foliage, topped early in the season by yellowish blossoms, possesses genuine beauty; but it spreads unmercifully and, on the whole, is best suited for a

The large leaves of the common coltsfoot (*Tussilago farfara*) follow the blossoms. Admirable for poor, dry soil

cover plant. Thus used it has a value far greater than is generally appreciated. The foliage keeps good all summer, though the new growth coarsens after the blossoms appear. My stock came from a little piece that I dug up in a burying-ground, where it had run wild.

Likewise unappreciated as a ground cover of distinct value is the common coltsfoot (*Tussilago farfara*). As in the case of the milkwort just mentioned, this plant, though beautiful enough, is a positive nuisance in the garden because of its propensity to roam all over creation. But it is admirable for covering spots that are difficult to keep

The cypress spurge (*Euphorbia Cyparissias*) one of the "escapes" from old gardens

green. For dry banks, or against a wall or the stone foundation of a house, it is one of the best of plants. The bare flower stalks, each with its little yellow dandelion-like blossom, come with the earliest spring flowers and are followed by very large leaves that hide the ground completely and remain in good condition until autumn. In shape and manner of growth the tufts of foliage resemble somewhat those of the burdock; but with their fresh green and their woolly under sides, the leaves are far handsomer. Both by underground suckers and

Write to the Readers' Service for information about live stock

self-sowing, the coltsfoot increases as rapidly as if it had the world to conquer. If used as a cover near the lawn or garden, the flower heads should be cut off before the seed ripens.

Another excellent cover effect may be obtained by the use of the old fashioned burnet (*Poterium sanguisorba*). This grows readily from seed and, being a perennial, takes care of itself thereafter. The beautifully cut dark green foliage is very profuse and mats thickly to a height of six or eight inches. After the first year, there are inconspicuous heads of dull red bloom. This burnet, used for flavoring drink in the olden time, covers the ground well on sandy and chalky soils; it has no particular dislike for soil poverty. In the garden I use it as an edging; it is fine for that purpose, as it is easy to keep within bounds.

The value of the common blue myrtle (*Vinca minor*) for filling in bare, or semi-bare, spots ought to be almost universally apparent. But if it is, advantage is too infrequently taken of the opportunity. It has the supreme virtue of being evergreen in the North, it will thank you for sunshine and thank you for shade, its blossoms are bright and pretty and in hardiness it is in the can't-be-killed class. It ought to be planted more on banks, where the white variety is very attractive.

Nor is the value of *Rosa Wichuraiana* realized to the extent that its merits deserve. Though called the memorial rose, there is no reason why it should be relegated to cemeteries. It is beautiful and useful there, but not less so on a bank or rocky ground with good soil pockets, either pinned down close or as a loose cover. This rose soon provides a virtually evergreen carpet and the single white blossoms make it almost as beautiful as the famous Cherokee rose of the South.

New York. H. S. ADAMS.

School Agriculture. By Milo N. Wood. Orange Judd Company, New York. Illustrated; 330 pages. Price $1.50 net.

The book is planned as a text for rural and ungraded schools. It is written in clear, simple style, with illustrations which really tell the story. An appendix of useful tables ends a book of real helpfulness for rural sections.

The Farmer of Tomorrow. By F. I. Anderson. The Macmillan Co., New York; 308 pages; $1.50 net.

Whether you are of the school of Liebig, or support Milton Whitney and the United States Bureau of Soils in the discussions as to the nature and permanence of soil fertility, the larger part of this book being devoted to this subject will surely interest you. The first chapters also are likely to, dealing as they do with the problems and transformations in farm land conditions in this country. The author is thoroughly optimistic and nas assembled his facts, figures and deductions in most readable and convincing style and array.

School and Home Gardens. By W. H. D. Meier Ginn and Company, Boston. 300 pages; illustrated; price $.80 net.

There are many school garden books, but Meier's takes quite a different viewpoint from the others. No time is lost laying plans for others. But all the best material for use is described, and then how to use it. The application of the work to the school, or the child, is left to the intelligent reader. It is one of the most suggestive of all the school garden books, and is as helpful to the city school as to the country school.

An Inexpensive Home-made Fertilizer

ONE is often advised to use ammonia to fertilize potted plants, applying it by adding a teaspoonful to a pail of the water given them. This is all right for *foliage* plants as ammonia — or any form of nitrogen alone — causes a growth of foliage. But unless the soil contains much potash and phosphoric acid the ammonia-fed plant will soon come to grief; certainly it will not bloom. Foliage plants require much ammonia (nitrogen), while *flowering* plants require a large percentage of phosphoric acid, to develop their buds and flowers, and less nitrogen than do plants that are grown for their foliage alone. Phosphoric acid is that part of the plant food in the soil that brings all vegetation to maturity, causing it to put forth flowers to produce seeds. In other words, nitrogen develops leaf and growth; potash gives strength and firmness to the stems; phosphoric acid induces bloom and matures the seed. Of these, phosphoric acid is the most expensive to obtain.

Now properly prepared bone — prepared with potash — is a most soluble and available plant food, and about the best fertilizer for flowering plants. But the market-offered article is high in price and besides is not offered for sale in all places. In any household where sufficient meat is eaten so that one has the refuse bones, and one will take the trouble, a valuable fertilizer that is high in phosphoric acid can be made from these bones at a trifling cost. It can be made in one's own backyard and is so very easily and inexpensively prepared in this way that the matter and process is worthy of consideration by all who cultivate flowers in the house or garden.

Save all the bones from the kitchen and pile them in an out-of-the-way place in the open. The action of the sun and rain, aided by an occasional sprinkling with the hose, soon cleans them of all fat and grease. Grease of any kind greatly weakens the action of the potash, applied later.

To 16 pounds of grease-free bones (I operate on a 16-pound scale because that amount of bones just nicely fills a stone crock that I use) is added 3 pounds of potash that has been dissolved in 4½ quarts of water. Either a tight wooden or a stone ware receptacle may be used, but *never* one of tin or *any* other *metal*. When the potash has become thoroughly dissolved, dump in the bones. Cover and let stand until all the bones are dissolved. This will require from two to six weeks according to the size of the bones used. Fresh and large bones require a longer time than more weathered or small ones. It may be stirred occassionally, though this is not necessary except to determine if all the bones are yet dissolved. When the bones are all dissolved the mixture will be thick, like porridge and of a grayish or brownish color.

To this now add 4 pounds of 50 per cent. sulphuric acid — having the druggist prepare it for you if possible. This acid solution should stand at least twelve hours after dissolving, as it becomes very hot in the process. Pour the *cooled* solution into the bone porridge slowly, stirring it all the time. The acid will liberate large quantities of carbonic acid gas, causing the entire mass to bubble and become very hot. Continue to stir the mass slowly with a stick as long as there is any bubbling. Let it stand until it is cooled off, when the product may be handled without injury to the hands or clothing. But be very careful while operating, *not* to let either the potash or the acid alone touch the hands or clothing as they each "eat" or burn. Now let this product stand *uncovered* in a dry place — an outer shed or barn — for a week to ten days, stirring occasionally. At the end of this time it should be a dry, fine powder.

Now for the matter of using. A teaspoonful may be used in a 5-inch pot, mixing it in the soil when potting. For other sized pots use proportionate amounts, of course. Also, it may be stirred in from the top, where plants are already potted, being careful *not* to mix it in *close* to the plant stems. Applied in this way the water will carry it down to the roots. A better way, however, when the plants are already potted, is to add a tablespoonful of the powder to two quarts of water and use once a week to water the plants. The powder can be kept for an unlimited time without deterioration.

New York. CLARK WESTFORD.

The Readers' Service gives information about automobile accessories

The Green Mountain Grape in Maine

PEOPLE living in other sections of this country do not generally associate in their minds the thought of grapes with Maine farms and gardens. Nevertheless, while on a trip through the rural districts of Central Maine last September, I ate, direct from the vine, grapes as fine as I have ever had even in the grape belts.

The Maine-grown grapes were invariably of the Green Mountain variety which, I was told, seldom failed to fruit well and ripen its fruit, even in that latitude above the 45th degree. Though it sometimes does not blossom until July first it will mature its fruit by mid-September if favorably located. It is of a white, or delicate light green color, midway between the Delaware and the Concord in size, and is very sweet and pleasant flavored — of a much better quality than most of the grapes found on the market. But it has a tendency to shell-off when ripe, so will not serve as a market grape.

Although this Green Mountain grape is, seemingly, about the best adapted to ripening its fruit in northern latitudes, to have it produce up above the forty-fifth degree requires some special care. The necessity of this has resulted in the devising of a vine-wintering and trellising scheme which I found in frequent use. In the first place, in order to have the grape ripen its fruit so far north, it is found advisable — essential, almost — to have the vine in some sheltered, sunny place, as on the south or east side of a building; and invariably I found grape vines planted on the south side of slab fences, sheds, barns, and stone walls. A farmer who has grown grapes as extensively as his number of outbuildings will permit — 14 separate vines and trellises, all told — told me this was how he achieved success:

"The first step is to plant the vine on the south, east, or, in a pinch, west side of a building not in the way of passersby. In the fall the vine is laid flat on the ground, the tip ends of all vines being farthest from the building. It is trimmed usually into a fan shape, and several pieces of old boards or sapling poles laid upon the vines to hold them in place.

Then, when the vine is all trimmed, a strip of 2-inch plank, three to four inches wide and long enough to reach the entire spread of the vine at its widest part (usually about three-fourths of its distance from ground), is placed upon it. At each crossing of a vine and the plank, they are tied together with a piece of manila cord or binding twine. The vine goes into the winter that way, the plank holding it down so that the first snows cover it completely. I give no other protection; where straw is put on the mice are apt to injure the vine by eating the buds and gnawing off the bark from the young growth."

In the spring, when the buds have begun to swell and danger from late frosts seems past, the whole vine and trellis is raised on a forked pole and the planking held against the side of the barn where it is securely spiked. If some of the longest vines extend far above the strip of plank they are caught in a loop of leather whose two ends are fastened to the barn by a shingle nail. Through July and August, the dry season, the added moisture the vine gets from the drip of the eaves is a great aid in keeping the fruit growing, while the reflected heat of the sun on the barn side is an aid in ripening the fruit quickly after it once becomes grown.

In the fall the vine is taken from the wall by cutting the leathers and then the tie-cords, and is trimmed and laid down as before. Then the strip of planking is loosened from the barn and, if long enough, used again on the vine and the tying done as before. That completes the entire process.

It is my belief that the trellising scheme could be improved by attaching an extra thickness of plank at each end and midway of the trellis plank, thus holding the bulk of the vine a little distance away from the barn and eliminating the possibility of the vines, by their retaining moisture, causing the decay of the barn wall.

New York. J. C. WESTFORD.

What is a fair rental for a given property? Ask the Readers' Service

Romances of Modern Business*

ARNOLD BENNETT, The English novelist, came to America not long ago to look us over. The distinguished author is a keen student of psychology, and our entire scheme of living fell under his microscopic eye.

After visiting several of the largest American cities, he gave some interesting impressions to a Chicago newspaper interviewer. Flinging open a window commanding a view of a wide stretch of Chicago's business district, he said:

"There is your American romance — there in the large office buildings and marts of trade! Yours is the romance of great achievements in commerce, in industrial leadership. And it is a wonderful romance! The child of the world's nations is leading them!"

The British writer got to the heart of this vital throbbing country. And if we look at our national commercial life as did this noted visitor, we shall find romance, absorbingly interesting stories, on every page of our magazines, not only in the imaginative writings of noted authors, but in the stories of business successes and of merchants and their wares.

There are many such romances in the history of American industry. Here is one of them:

CHAPTER I

THE STORY OF A FOUNTAIN PEN

At the rear of a news-stand, under the stairway in the old Tribune Building, in lower New York City, a remarkable discovery was made a little less than thirty years ago.

Pausing to make a purchase, the advertising manager of a well-known magazine, by one of those curious turns of chance, first learned of something that was to be of vital interest in the world of invention, and was to lighten the work of thousands in many nations.

Back of the news-stand stood a man with a small tray of goods which he was offering for sale. He was a kindly appearing man, slightly under middle age. His stock of merchandise was limited indeed. It contained only a half-dozen articles. But his goods were his own, of his own thought and invention.

This he told the advertising man; and so much did he interest his listener that, after the story had been told and the uses of his product demonstrated, there returned to the magazine office a man with a firm conviction that he had made a tremendous discovery.

The man who displayed his pet invention in the old Tribune Building news-stand was Lewis Edson Waterman, and the article he showed was the Waterman Ideal Fountain Pen.

The story of how these pens became so widely known and of how an enormous industry was developed in a few years is a very significant one. Waterman discovered the way to make a fountain pen; but a magazine advertising man discovered Waterman — *and therein lies the story.*

That was a little more than twenty-nine years ago. The inventor had confidence in his pen, but no money with which to market it; nor had he any business affiliations or influential friends. Today, the L. E. Waterman Company estimates that approximately a million and a quarter of their fountain pens are sold annually. Many millions have been sold in practically every nation of the earth.

The inventor had been a schoolmaster in his early manhood; then he became an insurance agent. During these experiences he realized the difficulties that lay in depending on the old-fashioned pen and ink. "Why," thought he, "can I not make a pen with a receptacle for ink and an easy flow?" He worked on the idea and soon had made the first Waterman fountain pen.

Coming to New York in 1880, he was informed that others had had the same idea, that more than two hundred other fountain pens had been patented. He investigated these and found they all had proved unsatisfactory. Learning their deficiencies, he perfected his own pen.

Then came the problem of selling his pens, of letting people know about them. How was he to do it? The inventor, knowing nothing of advertising, could think of no other way than going out and personally peddling his product. This he did, beginning in 1883 and continuing through part of the following year.

It was in 1884 that the Waterman fountain pen came to the attention of the magazine advertising manager. "Let me run a quarter-page advertisement of your pen," he suggested to Mr. Waterman. But the inventor had not the money it would cost. Then the advertising man did an interesting thing; so convinced was he of the commercial possibilities of the fountain pen that he loaned Mr. Waterman the price of the quarter-page advertisement.

This first business announcement of the L. E. Waterman Company appeared in a magazine in November, 1884. Prior to that, Mr. Waterman by personal solicitation had sold about three hundred of his pens. Within a few weeks after the advertisement appeared such a large number of orders had been received that Mr. Waterman negotiated a loan of five thousand dollars, with which to contract for additional advertising and have the pens made and delivered.

The business increased in strides so rapid that it soon became necessary to form a stock company and map out a systematic scheme of manufacturing and distributing the pens. An intelligent campaign of advertising was being carried on in a number of national magazines. In 1888, nine thousand pens were sold; seven years later, the number of orders had reached sixty-three thousand; in 1900, the business reached two hundred and twenty-seven thousand sales; in 1903, the orders had passed the half-million mark, and in 1912 nearly a million and a quarter pens were sold.

And what was the secret of this phenomenal success?

Mr. Frank D. Waterman, president of the L. E. Waterman Company, answering an inquiry as to what advertising had done for their business with a wave of his hand indicated the entire scope of their industry.

"Anyone can see for himself what magazine advertising has done for the L. E. Waterman Company," he said. "The business speaks for itself. The right kind of advertising is the life of trade. You must have the merchandise, of course, and the merchant must back up what appears in his advertisements; but advertising in the proper mediums is the real force of business.

"Advertising today is not merely giving publicity to your wares. The merchant today through advertising makes a reputation, and he has to live up to it. Advertising is sure fire, if it be of a sincere, convincing, confidence-gaining quality.

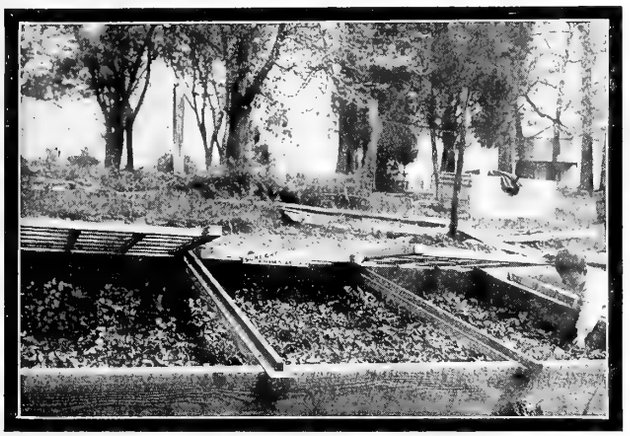
"Years ago, people asked the founder of the Waterman Company why he advertised so much in the magazines, and he replied that he couldn't get along without them. He found they paid, and so have I."

This story is interesting from more than one point of view. It has been shown that through the force of national magazine advertising a large industry was created. But there is another side — that of the significance of this creative power to the public at large.

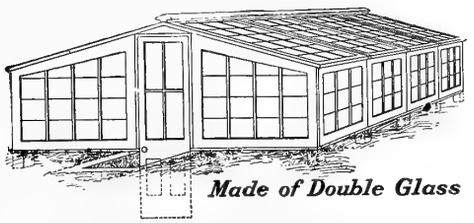
There is a broad, ethical mission to the development of an industry such as the L. E. Waterman Company. Thousands of people are served, office and written work is facilitated, time is saved and life generally made easier and happier for many the world over.

* *This is the first of a series of articles that is being published to show how magazine advertising is serving the public.—DOUBLEDAY, PAGE & CO.*

Have fragrant violets growing in the dead of winter

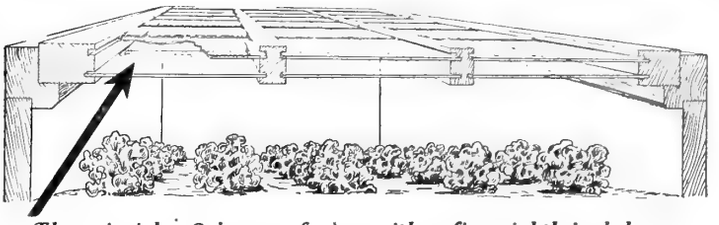


Pick your own lettuce, radishes or onions when your neighbor is paying the high early market prices



Made of Double Glass

This greenhouse serves two purposes. Being made of Sunlight Double Glass Sash you can use the sash both on the greenhouse and when wanted on a hot-bed or cold-frame.



The principle—2 layers of glass with a five-eighth inch layer of dry still air

Make the sun earn Profits in Winter

The sun sends out as many heat rays in summer as in winter. The trouble is that the nights are long. But the Sunlight Double Glass Sash captures the heat rays and warms up the hot-bed or cold-frame during the day and then holds the heat throughout the night. The two layers of glass with a dead air space between them are transparent by day and a better protection by night than mats or shutters.

If you want anything that grows in hot-beds or cold-frames —plants of any kind that must be started early to get early crops and big prices—you owe it to your pocketbook to equip your garden with the

SUNLIGHT
Double Glass Sash TRADE MARK
for Hot-beds and Cold-frames

They have been in use now for ten years with the greatest success by many thousands of gardeners, florists and amateurs. Made of the best cypress; glazed or repaired in half the time any other sash requires; eliminating all need of boards or mats; making plants early without undue forcing—they are simply indispensable if best results are sought. Learn all about them from the Sunlight literature and what is said by the people who have re-ordered as the result of their experience with them.

A new sun-heated greenhouse

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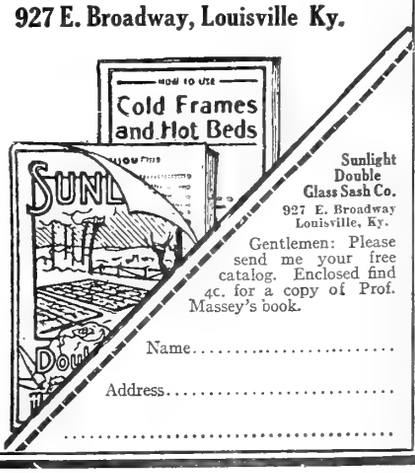

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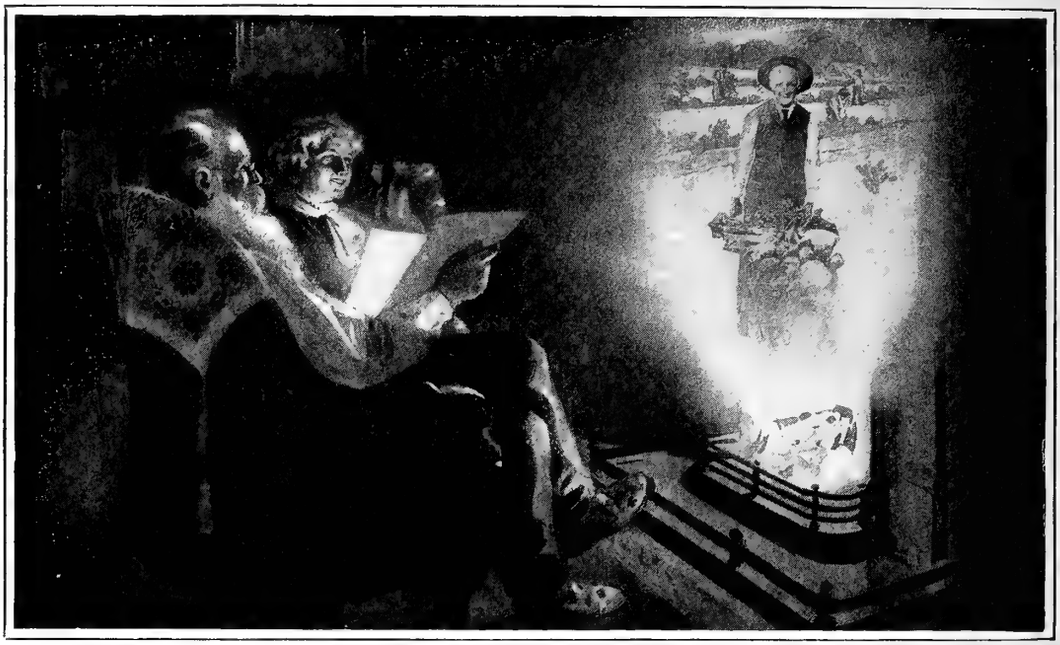

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