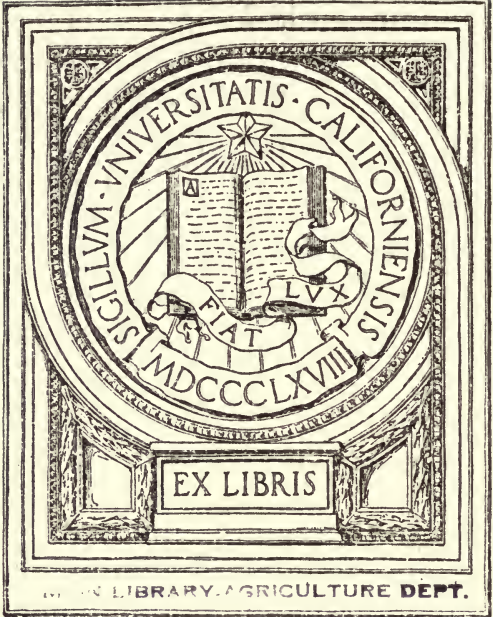


The Book of the Home Garden

Edith Loring Fullerton





**THE BOOK OF THE
HOME GARDEN**

THE BOOK OF THE HOME GARDEN

BY

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DEDICATED
TO
MY MOTHER

415313

PREFACE

The following pages were originally written for small children; as such they appeared in the *Country Gentleman* under the title "The Child's Garden." Gardening is such a big problem I was anxious to make it understandable to the beginner's mind.

Since our entrance into the World's War the knowledge of the vital importance of food production has led me to put these chapters into book form for "children older grown." The fact that flowers occupy some of the space may help to cheer us as we work at the big task of increasing the world's food supply.

The wonderful work the Boy Scouts of America are doing to help increase this supply, has, more than any other cause, led me to rewrite these chapters. Under the wonderful leadership of my life partner, the Chief Grub Scout, I am sure they will achieve yet greater results.

PREFACE

To the Scouts—both Boy and Girl— and to all Americans who are so earnestly and self-sacrificingly working in the garden and on the farm to win “Peace on Earth” I extend my hand in a clasp of comradeship.

EDITH LORING FULLERTON.

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INTRODUCTION

It is the eve of Christmas Day—a holy day. The lights from stained windows of All Saints Cathedral are reflected in my office. Liberty Hyde Bailey's "The Holy Earth" and the manuscript of "The Home Garden" are before me. Against the snow-banked walls of the church the ivy is sleeping and the ground around is frost-pierced. It is not a day for walking in a garden—except for the rose berry or bright barked shrub or barberry. It is rather an evening for sauntering *à la sainte terre*, as Thoreau puts it—a sauntering amidst memories of gardens past and visions of gardens to come—towards a home merry and wholesome on the Island by the Sound.

I am thinking of the Lady of the Garden, as I like to call the author of this book, and of her three children and of the Man-Out-of-Doors, and tonight my memories carry me back to the garden home of these people with its wealth of fruit and flowering shrubs, vegetables, trees and animals.

A garden is an intimate affair—very. And

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those who work in gardens and love them become intimate through those common possessions of the soil, the sky, the trees and the flowers. And so, without apology, I shall be intimate and personal in speaking of this manuscript which, between the lines at least, is a record of a family amidst a garden—a record, you may think, *of* a garden, but to me a record of the living of five people *in* a garden—Mother, Hope, Eleanor, Father and Loring. You may say that Hope, the oldest, raised the tiger lilies, the melons, the sweet peas, the gladioli—the pictures show it this way—but I am about to differ with you, for it was clearly they who raised Hope and Eleanor and Loring. The flowers and fruit and vegetables taught them—and I know them—to reverence God, to understand not perhaps the mystery of life itself, but rather to know that there is a wonderful mystery; to revere themselves and their physical functions because they know plant life and its functions; to live happily and healthfully in the great out-of-doors; to work steadily and patiently for the distant end from seeding to harvesting; to understand intimately through experience a great law—the law of cause and effect; to feel themselves a part of the great work-a-day

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world; to feel one of the great permanent satisfactions of life—the thrill of work well done.

It was the soil and the sky and the rain which painted the lily, but it was the lily that colored Hope's cheeks. It was nature that made the cucumber grow, but it was the raising of the cucumber which helped Loring to be sturdy and self-reliant. It was rows and their distance apart that made the dahlias do their best, but it was the laying out of the rows that made Eleanor understand her arithmetic. It was nitrogen that the peas gave to the earth, but it was peas that gave to Loring the real meaning of chemistry. It was iris that made the bowl of flowers possible, but it was iris that made Eleanor, who arranged them, know color composition and good taste. Legumes gave to Loring but another plant classification, but plant classifications gave to Loring a larger vocabulary. But why go on—you see the point. No one ought to question me when I say that the Fullertons did not make the garden—that the garden literally made the Fullertons healthful and happy, resourceful and reverent.

Yes, land is holy and the activities of child-life are hallowed and there is a relationship and a sig-

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nificance between the two that we are beginning to understand.

To-day the land may be hard and forbidding and it may not be the day for working in a garden, but it is certainly the day for thinking of the garden. The soil to-day is resting, awaiting to be born anew—resting until the resurrection of the Easter time. The out-of-door activities of childhood are at rest to-day too and there are only in-door games. Perhaps Loring has his new electric car with signals and tracks from the toy store (although I like the simpler things made by boys themselves with nails and sticks and hammer and strings and spools). But in the spring the rich race heritage of Loring and other Lorings, Hope and other Hopes for growing things or playing with living things will re-express itself, although perhaps even to-day these children may be poring over their seed catalogues and laying out paper plots of land for coloring and growing effects. Perhaps for supper to-night at that Long Island home there is a can of Hope's peaches or a jar of Eleanor's raspberry jam from the ample store room. And so, after all, the garden may live throughout the year and

INTRODUCTION

the incidents of childhood may rotate with the seasons in their varied expressions.

Yes, a garden is intimate and it makes all of us intimate. But just a word more.

The Lady of the Garden is not only a writer, mother, a gardener in the usual sense, but with Mr. Fullerton and the children, a pioneering farmer.

As editor of *The Agronomist*, as author of "Lure of the Land" and other books and as contributor to *Garden Magazine*, *Country Life*, and the *Country Gentleman*; as a worker in the field of children's gardens and gardens for the rich, for the poor—for all—Mrs. Fullerton has made a contribution to out-door life second to no woman in America.

ARTHUR D. DEAN.

**THE BOOK OF THE
HOME GARDEN**



THE BOOK OF THE HOME GARDEN

CHAPTER I

SOILS AND HOW THEY WORK

I EXPECT you think it queer of me to say *soils*, and suppose all earth is alike, but indeed no. Those of you who live on the prairie have one kind of soil, and those of you who live along New England's stern and rock-bound coast have another, and those who live in valleys where rocks are soft have another, and we Long Islanders have another. They all grow good crops and beautiful flowers but we must understand them so as to help and not hinder Mother Nature.

Let us find out what soil is, and how the Great Mother made it. Have you seen a big rock with a curious kind of gray green moss hanging to it? Well, that moss is called lichen and can live on just the rock and the rains and dews that fall. Every year some of it falls into a crack of the rock and decays, and then we call it humus. In this humus

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Mother Nature started a tiny fern, and every year, for years and years, the leaves die in the fall of the year, and drop down to the ground, making more humus, and the rains wash little particles from the rock and they fall into the humus, and make *soil*, and a larger fern grows; as more humus accumulates, a tree grows and so all soils are made, humus and powdered rock. This, of course, was started so many years ago we cannot think how many, and now we have all the soil we need; some have lots of humus and others have lots of rock.

The prairie has so much humus from the ages and ages of dead prairie grass that the soil is black, and we call it "black waxy." Those of you who live where there is much soft, splintering rock have a "shale" soil without so much humus, and those who live on islands and peninsulas have some humus, some clay and some sand, and we call that "sandy loam." But always and always wise nature has given us plenty of the powdered rock, and always and always as long as there were forests and prairie grass to drop their leaves in the fall, there was enough humus; but when the forests were cut down, and the prairie plowed up, Nature could not give her land humus any more. So that is what gardeners and farmers must do for her.



DIGGING INTO A PILE OF HUMUS. NOTICE HOW LARGE THE WEEDS HAVE GROWN!

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Remember, humus is some plant, or part of a plant, that has rotted, and it holds moisture like a sponge. If you will walk into the woods and dig down, you will see just what I mean; the soil is *always* moist, and it is dark with decayed vegetation. Plants like this better than anything else, because it is the food Nature made for them. So get humus into your garden if you can.

There is another thing about soils that we must know, and that is whether they are sour or not. Most plants do not like sour soil. It is very easy to find this out. Go to the drug store and ask for one cent's worth of blue litmus paper. It comes in a little narrow strip. Take some moist soil from your garden in your hand, or put it in a cup, bury the piece of paper in it and leave fifteen minutes. If, when you take it out of the soil, it has turned *pink* your garden soil is sour, and you must spread on it some lime or wood ashes, and rake them in. A bushel of either on a garden 50 feet square is sufficient. After a few days, test your soil again, and if the litmus paper *stays blue* your soil is sweet. Be sure and use air slaked, "hydrated" or agricultural lime (all words of the same meaning); quick lime would burn things, and the wood ashes should be unleached. It is queer how many things we do not

SOILS AND HOW THEY WORK

know about the soil, but we do know that lime or wood ashes and humus mixed with the soil *always* makes a good garden.

If you live on prairie land that is *new* you may not need much of anything in your garden the first year, but I would test it just the same.

If you live on "shale" land, you will need plenty of humus, and probably no lime. If you live on "sandy loam," you will need both lime and humus.

You see, humus holds moisture like a sponge, so the more we have in our gardens the better they will be in times of dry weather. If you cannot get leaf-mold from the woods, get some well rotted manure, and work it into the ground when spring comes.

Let us suppose a garden is on a steep hillside, and that is the only place you can have one. Then you will have more work to do than the rest of us, for you will have to make a shelf called a "terrace" for your garden.

Here is a hill, and here is your terrace garden. You see, you will have to dig a regular step in the hillside and plant your crops on the flat surface you make. I hope many of us will not have to do it, for it is a good deal of work, but you have this advantage: all the rainfall from the hill above your

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garden will run into it, but on the other hand, a very heavy rainfall is apt to wash your garden away.



A "TERRACED" GARDEN

If you have a chance to make your garden at the foot of a hill or near a brook, or creek, you are very fortunate, for these soils are rich in humus because the leaves and rich soil from the hill are continually



A "RAISED" GARDEN

being washed down. Do not get your garden in a spot too damp, for plants do not like wet feet *all* the time, any better than we do, and they get sick and die. If your garden has to be at the foot of a hill and the soil is *very* moist, then raise your garden six inches above the rest of the land, so that

SOILS AND HOW THEY WORK

the moisture can run away from the top part, but it will always be cool and moist down deep.

If you plan to have a garden in a city backyard, you are pretty sure to find it well filled with bricks



THE BEGINNING OF A CITY BACKYARD GARDEN

and cement and rubbish, and you are pretty sure to find the soil sour, too. If you cannot get lime (but I am sure you can get a few pounds from the cement and plaster dealers) and cannot get wood ashes,

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then take the fine coal-ash siftings and work them into the soil. It is hard, I know, to get well rotted manure in the city, and very hard to get it to your gardens if you could find it. There are men who are digging humus out of beautiful valleys and selling it to people who cannot get manure. It is also called Swamp Muck, and is as black as can be because it is really leaves and grasses which have been decaying for hundreds and hundreds of years. This can be easily handled and has no odor.

CHAPTER II

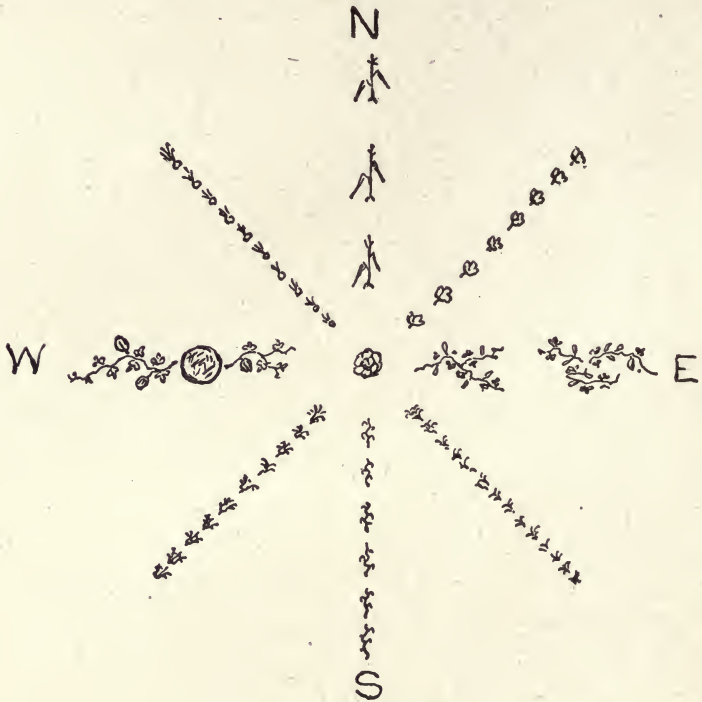
SIZE AND PLAN OF GARDEN

FIRST of all make up your mind that you are not going to have your garden too large. That is a mistake many gardeners make; they are so full of joy when spring comes and they have looked over catalogues so much they think they can plant the whole world. But we must never forget that a garden must be cared for all summer long; it is not just a matter of digging it up in the spring and sowing the seeds; it is constant care that makes a good garden. So once again, I say, choose a small garden unless you are an "old" gardener and know just what you are about.

Let's talk about the *don'ts* first. *Don't* have a round garden unless it is very small, because if you do you will have a very hard time keeping the weeds out of the center of it, and when you are reaching into the center, you are pretty sure to break the plants around the edge. There is one kind of a round garden you can have and that is a "radial" garden, made this way: Each ray can

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have a different kind of flower or vegetable, with one good sized plant in the center. It leaves plenty of room to cultivate between the rays, except at the



A "RADIAL" GARDEN

middle, and there you would have to be very careful. The way to make this garden is to drive a stick with a flat top into the center of the plot you are to use, then cut eight pieces of string all the same length (just as long as you are to have each ray) ; tack one

SIZE AND PLAN OF GARDEN

end of all the strings to the stick and if you have it or can borrow it, place a compass on the stick. Now draw one string out straight north, the next south, then east, then west, and the other four between the points, and you have a garden true to the compass. This is a very delightful garden. I had one once, and enjoyed it very much, but I would not advise you to use it if this is to be your first garden, or you want to raise much in a small space.

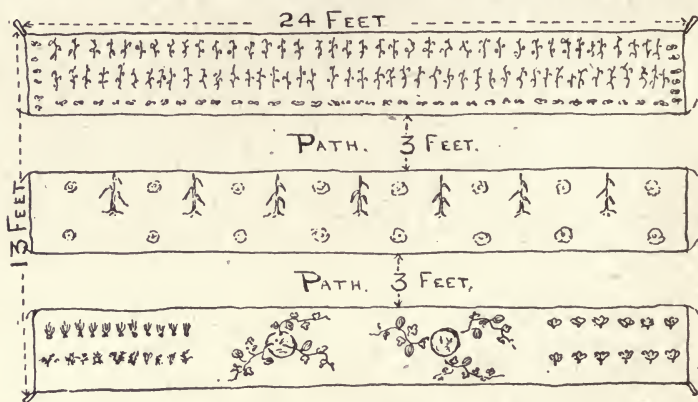
If your garden is to be a border, do not have it too wide unless you can reach it from both sides; for again you will break the outside plants. If it is to be along the fence line, do not have it more than two feet wide, and not that wide if your arms are short; in fact, I would reach across to the fence and see just how wide I should make it, if I were you. Do not have your garden too near trees, for the trees take all the moisture out of the soil and give too much shade. You may think in the early spring before the leaves are out that it would be all right, but you would be sorry before the summer was half over. A little shade, especially in the afternoon, is very good for a garden, but always have the morning sun if you can get it.

Don't have your garden where the rain from any roof falls into it, for the weight of water would

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squash your plants and pound the soil into bricks.

If you are going to grow flowers I think a border garden along the fence line or the garden walk is the finest kind to have, but if you prefer a regular garden all by itself, it is just as good. If you are going to make this garden into long beds, remember



PLAN OF A VEGETABLE GARDEN

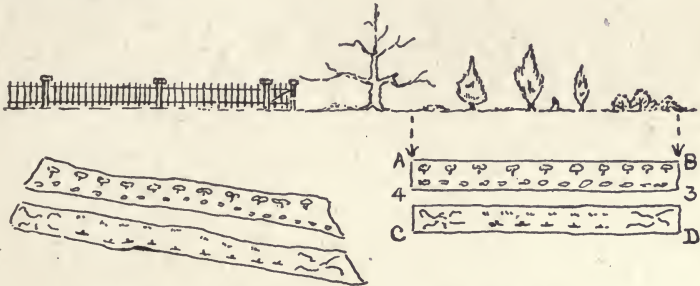
not to have them too wide, and the path between must be wide enough to do good work, say 18 to 20 inches. I would not skimp on paths. I do not think it pays.

Let us plan a garden 24 feet long and 13 feet wide; we can have our beds three feet wide, *because we can reach them from both sides.*

Laying out the garden is a very important thing. If it is done well you and your family and neigh-

SIZE AND PLAN OF GARDEN

bors will be glad all the year; if it is done wrong they and you will be equally sorry. Suppose there is a fence, or a line of trees or an arbor near where you plan your garden, and you are careless, it would look like this:



THE "CROOKED" WAY

THE "STRAIGHT" WAY

So as to be sure that it does not look that way, we will go to work right. Take something around the place to measure from, then get the same measurement for both ends of your garden. Drive a stick in at these two points; they will be sticks A and B. Now decide how wide your garden is to be and measure from these sticks, making lines 3 and 4, and put in two more sticks (never take out a stick for a new place; be sure you have at least four before you start). Now you must be sure that the sticks at corners C and D are just as far apart from right to left as the sticks A and B, and I can tell you that is the hard part, so do not be discouraged. Re-

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member this: A and B sticks *are to stay* and C and D sticks can be moved until they match A and B.

Don't try to have a fancy garden like stars, or hearts, or anchors; just have a plain, sensible, tidy



THREE BEDS, WITH WIDE PATHS, WHICH CAN BE REACHED FROM
BOTH SIDES

garden, without hard places to keep free from weeds. We do not like a room so full of furniture and ornaments that it is a nightmare to clean, and we do not like our gardens "fussed up." Mother Nature does not do that, and she is a pretty good person to copy.

CHAPTER III

SEEDS AND HOW THEY GERMINATE

SEEDS are the queerest babies in the world, for they have been known to sleep for many years, then wake up and grow just as though their plant-mother had lived the year before. We want fresh seeds for our gardens, for we are more sure nearly all of them will grow, while stale or old seeds are pretty sure to have a lot of "weak sisters" among them, who either won't germinate at all, or make long, lanky, spindly, good-for-nothing plants.

It is the most interesting thing to see how Mother Nature fashioned her different plant seeds; some are as round and fat as butter balls, others so thin you would think a plant could never come from them, others are so hard you cannot cut them with a knife, while others are so small they are no larger than grains of pepper; still others have a shell and a skin, while others have wings to fly away to new spots in the world, and still others have tiny downy brushes attached to them.

Every seed contains a root and a sprout, the root

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to go into the ground and get food and moisture, the sprout to grow above ground to get light and air. Some seeds are really a big storehouse of food for the little plant to use while its root is growing; the pea, the bean, and corn are good examples. Other seeds just seem to be a shell in which the plant lies curled up asleep, and their roots have to go to work right away.

If you want to see one of Mother Nature's cutest babies, just put a lima bean to soak in some warm water. After a while it will open like a door, and where the hinge is you will find a little root and two weenty, teenty leaves. When we put this seed in the ground it opens just as it does in water, then the root pushes into the ground and somehow seems to lift the bean up right out of the ground, and there the bean sits wide open with the little leaves ready to come out. These bean doors are really first leaves and they nourish the plant while the root is growing. Peas and corn also nourish the little plant, but they do not come up above the ground; they stay hidden in the soil.

Some seeds germinate very quickly and others take "forever and a day." Those that take so very long to start may be soaked in water over night, and of all the seeds we are liable to plant, only the

HOW SEEDS GERMINATE

morning-glory, parsley and celery need it. If we do not soak celery or parsley, it will take 21 days for the seed to germinate.

Every seed is supposed to have in it one plant; beet seed is not really a seed at all, but a fruit, for it contains several plants. Isn't it queer that Mother Nature should have done this with only one family of her vegetable children! And we cannot separate these seeds the way we can the seeds of an apple or an orange, for they are joined so closely together it is impossible to separate them without injury.

When you get your seeds, be sure and open the packages one at a time, and get acquainted with the sleeping babies; look them over carefully and say to yourself—"Yes, I know you, you are a nasturtium, and you have a queer shell like a peanut; you do not need the shell to make you grow, it is just your overcoat. You need to be planted about one inch deep, and you need plenty of sunshine." And so on through all your seeds.

If the seed is large like peas, and beans, it must be planted deep, one to two inches (you know the first joint of your thumb measures about one inch). Beans should be planted with the eye, which is really the hinge, down, then the root will not have

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to turn a handspring but can go right down into the ground. Other seeds do not care so much how they are planted.

When you have a long flat seed like dahlia it lies flat on the ground, but there is one very queer seed as round and flat as a 10-cent piece, and it wants to stand on edge like a hoop. It is the seed of a beautiful vine which has purple, trumpet-shaped flowers and is called *Cobœa Scandens*.

Some seeds are so fine we just scatter them on top of the earth, and pat them gently. The poppy has seed as fine as grains of pepper, and, do you know, I always put my poppy seeds in a pepper shaker and sow them that way, just making believe I am dusting pepper on a baked potato.

The old fashioned saying is—"Plant your seed its own depth"—and you can easily see that poppies have no depth at all, and so we put them on top of the ground, while radishes and nasturtiums must be covered with a blanket of dirt as thick as they are.

When you have looked at your seeds carefully and thought of the tiny babies inside, I am sure you will know they deserve a nice soft bed to grow in, and when you get tired working in your garden,



A CABBAGE SEEDLING LARGE ENOUGH TO BE TRANSPLANTED

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think of them and it will help you to go on with your hard work.

Let us think of the little roots that are going into the ground; they are after food for the plants and they want moisture and something there is in the ground that the moisture helps make; they want the soil tucked all around them, but loose enough so the little feeder or hair rootlets can scout around for food.

There is one thing I want you always to remember, that a root does *not* want a lot of air, for air dries them out and then they die. So while your garden soil is going to be as fine as you can make it, it must not be all puffy with air, but must be firm for the plant rootlets.

There are two kinds of plants that we have in our gardens. I like to call them "stay-at-homes" and "movers." That means some plants must always stay where the seed is sown, and others can be moved when the plants are small. The ones that are "stay-at-homes" send down a long fine tap-root, and cannot bear to be moved, while the "movers" have a bunch of fibrous roots, like a mat of hair, close to the surface and they do not mind much if you move them carefully.

CHAPTER IV

HOW TO CHOOSE SEEDS

THERE are so many pretty catalogues and they have such a way of making you think each variety is more splendid than the last one that you really do not know what to order. One day I heard a very big sigh from some one looking over catalogues and she said, "Well, I guess the only way to do is to order one packet of everything here." If she had done so it would have required several-acres in which to plant the seed.

"Variety" means different types of the same thing; for instance, there are red onions, white onions, yellow onions. Then there are "Yellow Danvers," "Yellow Dutch," "Golden Globe," "Prizetaker," "Giant Gibraltar," "Southport Red," "Red Wethersfield," "Australian Brown," "Silver King," and so on, but they are all *onions*. It is because there are so many varieties it makes it very hard to choose.

Some of our seedsmen have seen how hard it is for beginners to select seeds and they have also seen

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how much seed is wasted when only small gardens are planted, so they have selected a good variety of each one of the ordinary vegetables and a list of flowers which most every one loves and which are not difficult to raise and made small packets of them to sell at small prices.

Let us think a moment what it means to have good seed. First we have a picture in our minds of the beautiful flowers and splendid vegetables we are going to raise; then we have to work hard to make our garden soil mellow; next, we sow the seed with greatest care, cultivate often, carry water when it is very dry and if the seed is not good we either have very weak plants or none at all, or our vegetables are small or poor in quality. So you see we really need the very best fresh strong seeds of the very best varieties we can get.

We will first consider vegetables and about in the order in which they ripen. You know, I cannot always give you names of varieties because the seedsmen have different names for the same thing in different parts of the country. I hope some day that will all be changed and a "Sparkler Radish" will be a "Sparkler Radish" from Maine to Texas and not a dozen different names in as many states.

Radishes are the first vegetable to mature (that

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means really "grow up" but we think of it as meaning "become ready to eat").

Radishes have three shapes, long and pointed like an icicle, short and flat like a top and round and long like an olive. They also grow in several colors: red, white, and red with a white tip. Summer radishes have the same shapes but are much larger; they grow red, red and white, white, yellow, brown, and black. If your garden soil is not mellow deep down, I would advise you not to plant the long icicle shaped varieties. It is the root of this plant which we eat.

Lettuce is usually all green leaves, but some varieties have the green leaves tipped with reddish brown. Most people like the varieties that form a hard head, but some there are who prefer a loose leaf variety. It is difficult to grow good lettuce in the middle of the summer unless you live where the nights are cool and there are heavy dews. You know, we eat only the leaves of this plant, never waiting for it to blossom and make seed, and so we want the leaves as tender as possible; to keep them tender they must grow fast; hot, dry weather stops their growth and they either get tough or send up a blossom stalk from the middle, then they are not good for food.

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Peas are really a vine, but some of them have a very short vine (these we call dwarf), others grow very tall. Some of the seeds are as round and smooth as shot; others are wrinkled. The varieties that mature early and give us peas to eat a short time after the seed is planted are smooth. It is very interesting that Mother Nature should give these seed babies a smooth coat so they would not rot if we plant them early in the spring when the soil is soggy with water. She knew if they were wrinkled the moisture would get into the skin wrinkles and so rot the seed. Unless you have a lot of tree twigs, or brush wood or a fence, do not plant the tall varieties, for they do not do their best unless they have something to climb upon. And I would not advise those who have not done much gardening to try the very early or the very late varieties; better choose a good mid-season one. We eat the seed of this plant.

Beets grow in two shapes, round like a top, and long with a blunt end. They grow dark red all through, red and white striped and yellow and red striped. As a rule it is safer to plant the top-shaped varieties. We eat the root of this plant and sometimes the stems and leaves as well.

Beans grow as a vine, and as a bush. Some of

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them are eaten pod, bean, and all; in others we use only the bean. "String Beans" are eaten pod and all—they come in green and yellow and white (wax) skinned varieties. For years and years people have tried to get a variety that does not have a "string" down the side of the pod for strings are very unpleasant to eat. All this work has been successful for we now have "stringless" beans and they are very, very good. Plant the bush varieties for they are as good as the climbers.

Shell Beans are the same as "string beans" only we allow them to grow a little longer to fatten, then take them out of the shell. Lima Beans are quite large and are very different from the string beans. In the olden times they always grew on tall vines, but now we have them on small bushes and they are just as good as the climbers. They are taken out of the shell before cooking. Beans of course are seeds.

Corn is another seed we eat, but people use only the sweet or sugar corn for eating, either fresh or canned. Field corn is ground into corn meal and fed to animals. Some sweet corn is white, some yellow, and some black; some even pinkish; and there are early, medium, and late varieties. If you should plant both medium white and medium black

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varieties, you would find the ears contained both black and white grains. So if you want two varieties, plant one kind early and the other late, then each variety will be true to the seed you planted. The dwarf yellow varieties like "Golden Bantam" and "Peep o' day" and "Golden Cream" are very sweet. "Black Mexican" is also very sweet, but not as pretty. *Pop Corn* is allowed to grow until the seed is ripe; it is not a tall variety and is very interesting to grow as well as to eat when it is popped.

Swiss Chard is a very pretty vegetable; it is really a beet. The root does not grow large but the leaves do. They are crinkly and the rib which runs down the center of the leaf is broad and white. We use the leaves of this vegetable instead of spinach, for it loves the summer's heat, while spinach can only be grown in the early spring and fall in most sections of our country. This is really a "2 in 1" vegetable because the white rib can be cut out of the leaf and cooked like asparagus or celery and the green part of the leaf can be used like spinach. If you can buy a variety called "Lucullus" do so by all means.

Squashes grow in many shapes and colors and some have long vines while others have bushes. The bush varieties are much the better for you to grow because they take up less room in your garden

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and the great big seed pod (which is the part we eat) is just as good as can be. You can have squashes white, yellow or green; with a crooked neck; round and scalloped like a patty pan or oval like a small watermelon. One splendid variety is called "Vegetable Marrow." If you did not know it was a squash you would wonder what in the world it could be.

Cucumbers grow on a vine which lies flat on the ground but you can train them up on a tree branch or small arbor if you want to. You can have short chunky cucumbers, or long slender ones. If you live where the season is long and you have plenty of sunshine, you can grow the English frame cucumbers out of doors. They grow 18 to 20 inches long and about five inches around. Cucumbers are seed pods which we eat while they are young and tender.

You can grow *onions* two ways; if you want them very early, plant onion "sets," which are really baby onions; they grow very quickly and are eaten before they make a bulb. If you want large bulb onions, plant onion seed, but make up your mind you will have patience and give them good care, for when the seedlings finally come up you have to lie down flat and look along the row, where you will see something which looks like hair. They are so tiny

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and the weeds get among them so easily, you will have to tend them on your hands and knees, but they pay for the work. Red and brown ones keep the best; yellow and white ones are the most delicate. It is the thickened stem of this plant that we eat.

Carrots grow very long like a big icicle; medium long, and blunt ended; and nearly round. As a rule the medium long roots are the best.

Cabbage is light green, dark green, and red (really purple); round, flat, and pointed, smooth and crinkly; early, medium, and late. They do not grow well where the weather is very warm, and, like lettuce, must grow quickly so they will be tender. Do not try to grow the "biggest" variety; as a rule, they are not as good as the smaller ones.

Muskmelons or cantaloupes and *Watermelons* grow on vines which take up even more room than cucumbers. They can be trained up but seldom are. Muskmelons grow in many different sizes and colors. The Emerald Gem is small, round, green on the outside and salmon colored inside, while Montreal Nutmeg is very large, weighing over 10 pounds, covered with a gray netting on the outside and light green inside. Some also are oval-shaped, but nothing is much better for our garden than the little Emerald Gem or oval netted Burrell's Gem.

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Watermelons are round and oval, very dark green, light green, striped and splotched on the outside while the inside varies from pale yellow to rich red. All melons like plenty of humus in the soil, and lots of sunshine.

Parsley is so pretty we can grow it in either our vegetable or flower garden (remember, it takes 21 days for the tiny seeds to germinate, so be patient).

If you are fond of *Peppers* they are one of the prettiest plants you can raise. Sweet peppers ripen red or yellow but we usually eat them while they are still green. Do not raise any variety except the "sweet" peppers for the "hot" ones may cause you trouble; if you should handle them and then rub your eyes, you would wish that they were not in your garden.

Tomatoes come in so many different varieties they are really bewildering. They grow into tall vines, or make dwarf bushes; are red, yellow, and peach colored; and are every size from a grape to a large apple. There are also very early varieties and late ones. I would advise you to plant a late variety in your seed boxes and choose one that does not climb. If you wish some little yellow ones to preserve, the "plum" or "egg" variety is the best for that purpose, unless you like the "husk" tomato,

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which is red and very sweet. It grows on a low spreading bush and has a husk over it which looks like paper. Tomatoes are seed pods.

Turnips like the cool weather of late summer and early spring. You can have them yellow, or white, or white with a purple rim around the top; and they grow egg shaped, top shaped, and disc shaped. The white and white with purple top are the most delicate.

Peanuts are lots of fun to grow if you live where there is a long growing season and plenty of sunshine. We grow some every year, we are so fond of them. There are two kinds,—one very large, the other very small; strange to say the smaller is the better.

White Potatoes are very easy to grow where the weather is fairly cool. They require quite a little room but are extremely nice to have in our gardens. They grow in a very peculiar manner. We do not plant the seed that grows as others do, but we use the potato itself to make a new plant. No doubt you have all noticed the eyes or dimples on white potatoes. These are really buds and a plant comes from each one of them, so when we are ready to plant we cut a potato into pieces so there will be about three eyes on each piece. If you have some



FIFTEEN POTATOES FROM ONE QUARTER OF A POTATO

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very good potatoes, I mean the kind that you all like, and they have no black spots in the middle of them, and are not all rough and scratchy on the outside, plant them in your garden. If you do not think the potatoes you are using are good ones, then it is best to buy some seed as we call it, although it really is not seed at all.

Sweet Potatoes love a sandy soil and lots of sunshine, because they grow a great many days longer than white potatoes before they are ready for use. We do not plant sweet potatoes the way we do white potatoes, although the plants do come from the eyes in the same way. We put the potato in sand in a warm place where it is light and it will very quickly send up shoots and these shoots have a lot of roots attached to them. We break these shoots off, root and all, and plant them in the garden just as we would set out any other plant. If you live where you can start your own sweet potato plants, use any medium sized, smooth, firm potato that you can easily get. If you cannot grow the plants they can be purchased from most any seedsman.

The following are good varieties of the vegetables we have talked about and will help you choose. I

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find them listed in catalogues from the East, West, North and South:

Radish, Scarlet Globe (red), White Icicle.

Lettuce, Big Boston or Cream Butter.

Peas, Stratagem or Gradus or Yorkshire Hero.

Beets, Crimson Globe or Detroit Dark Red.

Beans, Stringless Green Pod or Golden or Brittle Wax.

Limas, Improved Bush.

Sweet Corn, Golden Bantam, or Black Mexican.

Pop Corn, Yellow or White Rice.

Swiss Chard, Lucullus.

Squash, Fordhook.

Cucumbers, Davis Perfect.

Onions, Prizetaker seeds, White Pearl sets.

Carrots, Chantenay or Ox Heart.

Cabbage, All Seasons, or Volga, or Danish Ball-head.

Muskmelons, Emerald Gem or Burrell's Gem.

Watermelons, Kleckley's Sweet or Tom Watson.

Parsley, Moss Curled.

Peppers, Chinese Giant.

Tomatoes, Dwarf Stone (red), Yellow Egg.

Turnips, Purple Top Strap Leaf (white) or Golden Ball (yellow).

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Peanuts, Spanish.

White Potatoes, Bliss Triumph or Spalding.

Rose or Irish Cobbler.

Sweet Potatoes, Yellow Nansemond.

CHAPTER V

GARDEN TOOLS

TOOLS are really almost as important as seeds. The old fashioned saying, "You can always tell a workman by his tools," is very, very true. If you have tools already, that is fine, and a really good workman will put what tools he has into such shape that he can make an excellent garden, but I presume there are a good many who have never gardened before, and if they have, have simply used anything they could lay their hands on.

There is a set of tools called a "Ladies' Set" and has besides the hoe, rake and shovel, a digging fork. These are made of the same strong material that large tools are made of, but are only one-third the size and weight; they are particularly good for small gardens.

Now let us see in what way these tools are to be used.

The digging fork is just about as important a tool as can be, for it helps us make a better garden and a finer seed bed than any of the others. Stick

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this fork into the ground, press it with your foot, and take up a clod of earth. As you raise the fork with the clod on it, turn it over; that turns the clod upside down. Then hit the clod several hard whacks with your fork and it crumbles to pieces. Keep doing this all over your garden and if the earth is still very lumpy, leave it a day or so and fork it again. You could do this with a spade, but I am sure you will use the fork wherever you can because you will find it does better work.

After our garden is forked, it is full of hills and valleys, and we wish it smooth and even, so we take the rake, which is really a great big comb, and scratch the earth backwards and forwards, backwards and forwards, until it becomes smooth and the surface fine, for the rake also helps break the lumps.

The hoe is very useful in pulling dirt from one place to another and is also very useful in taking out weeds from around our plants. The hoe is called a cultivating tool. Cultivating means to stir the top of the ground. It seems kind of queer that we should disturb the earth around our plant by scratching it up, but there is one of the laws of nature which makes it necessary for us to do this if we want good gardens.



"LADIES' TOOLS" ARE STRONG, WELL MADE AND OF MEDIUM SIZE

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You remember I told you that humus holds moisture like a sponge. It is not only good to help us hold the sub-soil moisture, but it soaks up all the rains and the dews and holds them for our plants to drink. Also it makes our gardens very much easier to dig and cultivate.



HAND TOOLS. USE THE FORK AND CLAW WHEN CULTIVATING; THE TROWEL WHEN TRANSPLANTING

A little hand fork like the one shown in the picture is extremely nice to have. It helps to scratch the soil between our plants when they have grown large and are taking up a lot of room.

A trowel is to help us make holes in which to place our transplanted seedlings, or carry a plant from one place to another. We push the trowel

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down deep in a circle, around the plant, several inches from the stem. Then we can lift the plant, roots, and dirt, and if the soil is moist, as it always should be when you are doing any transplanting, the little plant will hardly know that it has gone from one place to another.

A sprinkling can is extremely useful if a hose does not run near your garden. And here is a very good rule to remember: When you do water your garden, drench it, and then leave it several days without water, until the surface is dry again. But never sprinkle your garden until it just looks pretty, because if you do the little thirsty roots will come right up to the surface of the soil to get this water and as soon as it is gone the hot sun will bake them and shrivel them and your plant will have to make more roots while you are wishing it would make a fine vegetable or beautiful flower. The hotter the weather, the more we want to cultivate, because Madam Sun is pulling, harder and harder, on the sub-soil moisture, so we must work harder and harder to save it for our plants.

If you have a large garden, and are fairly strong, nothing is much nicer than a wheeled cultivator. They are made with one wheel and with two wheels and you can attach to them, for different kinds of

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work, a plow, or a hoe, or cultivator teeth or rakes. These are to be used between the rows of plants. Push them in front of you, a step at a time if it is hard work, but if it is easy for you it can be pushed straight ahead while you walk slowly. As a rule we give a push and a step, a push and a step, always pulling back a little bit after each step. It is wonderful how quickly you can cover a lot of space with one of these and it is wonderful how using the cultivator every day will make your garden grow.

The large claw on a long handle is an extremely good cultivator and will help stir the ground well and quickly. It is a good thing in a big garden where you have not a wheel cultivator.

These tools are all splendid to possess but there are ten tools that none of us can do without and those are our ten fingers. If you are afraid to put your fingers into good old Mother Earth, if you don't like to take some of your garden soil into your hand and feel it and think about it, and watch it improve from year to year, growing darker and darker in color, and looser in texture, and richer in quality, then you don't want to be a gardener any more than you would want to be a dressmaker if you hated sewing or an engineer if you hated mechanics.



USE A WHEEL CULTIVATOR" IF YOUR GARDEN IS LARGE

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When we come to weed close to our plants there are not any other tools that will take the weeds out as well as our fingers, and if you want a weed out of the garden so it won't grow again, pull it up root and all and carry it away where the sun can dry it and kill it. Just cutting the tops off won't kill a lot of them; they will start again. Weeds do two disagreeable things, they take the moisture away from the plants we want and they make seeds to make more weeds which we don't want. So if you keep your garden well weeded this year, the chances are you will have less work next year, unless you are unfortunate enough to have your garden surrounded by weeds which are allowed to go to seed, or unless you should get some manure full of weed seeds which have not been killed.

CHAPTER VI

MAKING THE GARDEN

LET us presume you have your garden measured and staked off. When the frost is out of the ground and enough moisture has disappeared it is time to begin. My Southern friends do not have to consider the frost question, but if you live on a clay soil you must wait until it is dry enough not to make bricks when you step upon it, and pack it down so tightly you have difficulty in forking it fine enough to sow seeds; the same is true if you live on a "shale soil," but those who live on a sandy loam will be able to start gardening almost as soon as the frost is out of the ground. Do not wait for the soil to get bone dry (if it ever does get bone dry in spring time), because you would then have powder to work with.

Let us suppose you have a garden like the one I described in Garden Plans. It is just as long, but only 8 feet wide, with a path through the middle and one on each edge. We will also suppose you have this all staked off; your beds are three feet

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wide, and the path through the middle two feet wide.

If you have not already put humus on your garden, now is the time to get it and spread it on the beds (but not on the paths). We want to fork it down where the roots can feed upon it and where it will hold moisture for them. This humus does something more than I have told you, it changes the minerals which are in all soils into a different form so plants can use them. If we do not have some humus these minerals remain locked up so they are of no use to our plants. When humus decays it gives off a kind of gas which makes this magic change. This is interesting and wonderful and makes our garden work mean so much more to us.

Now stand at the end of one of these beds and put your garden fork into the ground near the left hand corner, press it down deep, lift the clod of earth, turn it over, and spat it with the tines of the fork until it crumbles to pieces. Take a fork full next it to the right, turn it, spat it; then take another fork full. Now you have a row forked at the end of the bed; take a row next to it nearer the center of the bed and so on, stepping *backward* all the time until you reach the other end of the bed. I expect you wonder why I have been so particular



AFTER THE GARDEN IS LAID OUT FORK THE EARTH, TURN AND SPAT
IT UNTIL IT IS FINE, ALWAYS STEPPING BACKWARD

BOOK OF THE HOME GARDEN

to explain this to you carefully. I will tell you the reason: If you did not do it this way you would be stepping on your freshly forked soil and that would spoil the whole game. Do you see?

Go to the next bed and fork it the same way, and so on for as many beds as you have. It is hard work and requires strong muscles and good lungs; if you haven't got them take your work slowly, a little at a time, and you will be surprised how it will help you to grow strong.

If your garden is to be a border by a fence or house, stand facing it the long way. First take a fork full of soil at the back of the bed, then one just in front of it and so on until it is complete.

Test your soil with blue litmus paper to see if it is "sour" or "acid" as we talked about in our story of soils. If it is sour sprinkle the surface with lime or wood ashes until it is white all over for we want to rake it in, not fork it down. Why? Because the rains are going to dissolve it and carry it down through the earth.

You will next need the rake to smooth the surface and break more lumps; draw it backward and forward in every direction until your arms ache; when rested do it again until the surface is fine and smooth. I have often found that standing the

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handle of the rake up straight and pounding with the flat of the rake helps break lumps beautifully.

Now you will find you have scattered loose earth all over your paths, and the lines of your beds have grown very crooked; this is where Mr. Hoe helps. Stand opposite the line you wish to straighten and draw the earth from the path on to the bed. The back or smooth edge of the rake would do this too. This part of the rake is often used to give the final touches to nice garden work.

If you are making a border bed such as we just spoke of you cannot stand opposite the edge of the bed to draw loose earth in, so you use the back of the rake and push it until you have a straight line.

I presume you think your garden is ready to plant, but no indeed! You would be sowing seeds in a down quilt and there would be so many puffy air pockets in the soil your poor seed babies could never get a firm foothold.

If your garden is large and you can get the use of a lawn roller, put it on your bed (and paths too if you wish). This will press the earth particles together and squeeze the air out. If your garden is a heavy clay soil it will need only a little rolling, if a light sandy loam it will need more. I presume very few of you will use a roller, as they are not

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common, so you can take a board the width of your bed, lay it on the soil at one end and walk on it. Lift the board and move it along until the edge laps the last row and so on until you have the whole surface flattened.

I warn you now you will not want to do this and will feel sure your beautifully forked and raked bed is just right, but I have tried it many, many times and *have always been sorry*. The best seed beds I have ever seen were rolled. Try a little piece anyhow, then get down close and scratch the surface with your fingers; you will find it as fine as ever, but not puffy.

Now your garden is ready to plant.

CHAPTER VII

BUGS AND BLIGHTS

“FOREWARNED is forearmed” is an old saying, which means, if you know an enemy is coming you will be armed to meet it, and that is just what I want you to be. I am anxious you should know the enemies to your plants so as to be able to see them as soon as they arrive, then they will not get the better of your plants while you are finding out what they are and how to kill them.

Usually the first one we meet in the spring is the “Flea Beetle.” You may find him on radishes or peppers or potatoes or egg plant, and possibly on some flowers. He is about the size of the head of a pin, sits on the upper side of the leaves, is jet black and there are usually lots of them together. If you touch the leaf they suddenly disappear, as they are great jumpers. They all return shortly however to feed again upon the leaves. We cannot poison them very well, but they hate grit, so get some road dust, or finely sifted coal ashes, and sprinkle it all over the plants. Mr. Flea Beetle will go elsewhere for his food.

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The next insect you are not so apt to find but you will see what he can do. If, some morning, you find several plants lying down, wilted and looking as though some one had pulled them up or cut a notch in them, you may be pretty sure a "Cut Worm" has been at work. He is a night prowler, and has a pair of scissors in his head. He crawls along chewing plants for his supper. He hides by day under a stone, a stick, or just under the surface of the ground. Gently, with a small stick or your finger, scrape the earth away around where the plant stood and the next plant to it; if Mr. Cut Worm is there you will find him. He is grayish in color, and rolls up in a circle when touched. Step on him or burn him or drop him in a tin can containing kerosene, but get rid of him some way, so he can do no more damage. We can poison him because he is a chewer; also he has a "sweet tooth," so mix up a tasty dish of bran or grass or clover leaves, and enough molasses to make a crumbly mass and add a little Arsenate of Lead which is a paste and is also a poison. *Never put your fingers near your mouth when you are using poisons, until you have washed them well with soap and water.*

Well, to go back to our "Bran Mash." When this is thoroughly mixed sprinkle it around your

BUGS AND BLIGHTS

plants and I think Mr. Cut Worm will feast upon it instead of your crop. Keep your eyes open, however, for some may still prefer green food.

On your peas you are liable to find the tiny green "Aphis," the same insect which comes on your in-



THE INSECT IN THE WHITE COCOON IS THE NATURAL ENEMY OF THE TOMATO WORM. DO NOT DESTROY IT

door seedlings; sprinkle them with powdered tobacco or tobacco tea.

The tomatoes may get a large worm upon the leaves; this worm is a "Lightning Artist" and can eat up the leaves of a whole tomato plant or even the tomatoes themselves, in a short time. He is so big and has such a large jaw that you can actually

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hear him eat. Knock him off the plant into a tin can which has a little kerosene in the bottom unless he is covered with white egg-like specks such as you see in the picture. If these are on him let him alone because there are tiny insects inside the egg-like cocoon which will kill the worm by slowly eating it up. They are his natural enemies, and we want the enemy to go on living so as to kill more tomato worms.

You will find a small smooth greenish worm in your cabbages and collards; if we put poison on the leaves, he will eat it and soon die, so you will need to spray these plants with Arsenate of Lead diluted in water this way: Water one quart, Arsenate of Lead Paste, $\frac{1}{2}$ teaspoonful. Mix until the paste is all dissolved and either spray it all over your plants, or take a whisk broom, dip it into the poison liquid, and spatter it over the plants, or take a watering can and sprinkle over them that way. The spray pump is best because it does not waste the poison mixture.

You will have to watch your corn when the silk begins to show, for a little grayish worm loves to crawl into the ear and eat the kernels. Pick them out when you find any and destroy them as you would cut worms.

BUGS AND BLIGHTS

You may see a small beetle, striped yellow and black or yellow and green, around your melons and cucumbers. He does not do much harm, but his children are terrors. Mother Striped Beetle lays some eggs close to the stem of the vine; baby grubs, called "borers," hatch from these eggs and at once go into the stem of the vine and eat their way



CORN WORMS BUSILY AT WORK. THE MOTHER LAYS HER EGGS NEAR THE SILK AND HER CHILDREN GO INTO THE EAR OF CORN

straight up the center of it, which of course causes the plant to die, as the sap cannot circulate to feed the leaves, blossoms and fruit. Our only hope is to poison Mother Striped Beetle before she lays her eggs. As melons have a disease called "blight" as well as a bug to chew them, we have to spray for two things. We use a poison to kill the bug, and a fungicide to kill the blight (which is really fungus). So get some Arsenate of Lead and Bordeaux Mix-

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ture and put them together, or you can buy them already mixed. The Bordeaux and Arsenate of Lead will not hurt your plants so you can use this mixture any time you wish, whether to kill bugs or blight or both. But don't forget they are poisonous!

Take my advice and do not wait until you see the blight, which turns the leaves spotty, grayish, or brown, and shrivels them up, but spray while the plants are young to keep the blight away. When it once attacks a plant no one has yet been able to cure it; we can only save the other plants. Blight is like a big fire. There is no use wasting water on the building itself; we must fight to save the surrounding buildings.

Beans should be sprayed with either the Bordeaux or the Bordeaux and Arsenate of Lead as soon as they come up because a blight attacks them which makes round brown spots on the beans and ruins them for use. There is a long name for this blight (An-thrac-nose), but it is commonly called "Bean Rust." Your beans may be perfect and as strong as can be, but one warm damp night will start the blight and in 12 hours your crop will be ruined.

There is a most beautiful green and black striped

BUGS AND BLIGHTS

worm which loves carrots and parsley. They are not very numerous so you can pick them off as you do tomato worms.

Squashes have a queer grayish three cornered bug which has a bill like aphid, which it sticks into the leaf and sucks the juices, so we treat him to a dose of tobacco. Striped beetles also love squashes so we must spray with Arsenate of Lead for them.

You are not so liable to have insects on the flowers as on vegetables, but they do come and you should be prepared to meet and defeat them. Aphid comes on pansies and sweet peas, and sometimes on other flowers. Tobacco for him! Asters are eaten by large black beetles, which you can knock off into a can of kerosene but you must keep a sharp look out for them for they love the flowers better than the leaves. Little green worms may appear and these we kill by spraying with Arsenate of Lead. If a mildew should come and spot the leaves of your flowers, spray them with Bordeaux Mixture.

Don't be discouraged because we have to do a certain amount of fighting for our gardens; now that you know what to expect and will recognize the bug when you see it and have a guide to what kills it, you may feel perfectly sure to bring your crops through, but it requires careful watching every day,

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so don't be a gardener if you are not willing to be a good care taker.

Now for the weapons with which to use our ammunition. A small spray pump is a very good thing indeed; it costs but little and does good work. Mix the poison carefully as I have directed, pour it into the can-part until $\frac{2}{3}$ full, then work the handle back and forth, in and out, like a pop gun; a fine mist will come from the little nozzle. Direct this spray on the plant until it is wet all over—on top of the leaves and under the leaves and on the stem.

The spray pump is good for any one of your mixtures but be sure the poison is all dissolved before you pour it into the spray pump can for it will refuse to work if there are any lumps or sticks or leaves in the liquid. It is much wiser to strain it through a cloth than to "guess it is all right."

The little powder gun is splendid for powdered tobacco. The larger gun is called a "Bellows," and is better to use if your garden is large. It is wise to blow this powder on the plant when it is damp with dew; if you have no dew and the plants are dry, sprinkle them a little, then blow the powder. It will stick, killing the bugs because it burns their skin.



IMPLEMENTS OF GARDEN WARFARE. A SPRAY PUMP FOR LIQUIDS AND
BELLOWS FOR POWDERS

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Many of our chewing insects have moth mothers that fly at night, laying their eggs near or in the plant where the baby grub worms are to live—so if we could catch the mother before she laid her eggs, we would save many plants from being eaten by the worm babies. I guess you all know that moths fly to a light and singe their wings—silly things—so we will give them a light to fly to and when they singe their wings we will have some water with a little oil floating on the top for them to drop into. I wish I had a picture to show you how easily this is arranged. A torch (burning kerosene oil), placed in a tub of water, does the trick. May and August are the time to catch the night fliers.

We have the very best garden friend—a friend we cannot possibly get along without; one who lives almost entirely upon the bugs which eat our plants—his name is bird—and there are dozens of kinds of him. He is so good to our gardens, so sweet and cheery to have around, so beautiful to look at, so cunning and clever in his ways, that we must do all we can to make him welcome, happy and comfortable. He must be comfortable and not afraid or he will not bring his wife and go to housekeeping; there is one thing we can give him that he really needs, besides kindness, and that is water to help

BUGS AND BLIGHTS

build his house and drink and bathe in. Give him a bath. A shallow pan, or an old stump of a tree, with some stones sticking part way out of the water for him to stand on, will do splendidly, and he will repay you an hundredfold by eating aphids, cut worms, cabbage worms, and many other insects which injure our gardens. Have your bird bath in a little sheltered spot if there are no cats around, but if there are, put the bath on a post with an old pan turned upside down so cats cannot climb over it to catch the birds.

Isn't it wonderful how everything was made to feed upon some other thing; birds on bugs, cats on birds, one kind of bug on another kind, and one kind of plant (blight is a plant called fungus) on other kinds of plants. That is the way nature keeps a balance and does not let any one creature have everything. A mother aphid has several hundred babies; these babies grow up and have children in less than a day. Many other insects do the same thing. Just think how the world would crawl with bugs if birds did not eat them.

CHAPTER VIII

SOWING SEEDS INDOORS

MANY who live where it is warmer than at my home will be ready to start some of their plants in January, and in fact most all of us can start some in February.

If we want early plants, they must be started indoors in the snowy north. We cannot plant all our seeds indoors, because some plants, you will remember, cannot be moved but must stay where they first start to grow.

The flower seeds we can sow indoors are pansies, dahlias, asters, nasturtiums (if you live where the season is short and cold), phlox, morning glories and marigolds; but I would not advise you to plant any of these indoors except pansies and dahlias, unless you live far north.

Of the vegetable seeds, the most important to plant in the house are tomatoes, early cabbage and peppers. These indoor plants are going to have a hard time because they must be moved one or two times, so we are going to do all we can to help them along.

SOWING SEEDS INDOORS

First, we must have a box with some holes in the bottom to let off any water that may not be needed. I think a starch box, or one about that size, is the best. Now we will copy Mother Nature and try to make the ground in the box just as she has it out of doors. You know down deep she nearly always has sand and gravel or rocks so the extra water can seep away; so we will put some gravel or lumps of charcoal or coal cinders (whichever you can find) in the bottom of the box, and this we call drainage. Don't be afraid to put in quite a little, one inch at least.

As we have a chance to make our ground just as we want it, we will make it rich and mellow so our plants can make a good strong growth.

First, let me tell those who live where there is clay soil what to do. Take some soil from the garden, and if it is frozen it will have to be chopped out and brought into the house to thaw. You will need one-third as much as your seed boxes will hold, which, of course, will not be very much. Now take as much humus as soil and as much sand as soil, and mix and mix and mix them all together. If it is fine and free from lumps it is ready for the seed box, if not, use a sieve and shake the soil through it. I think you will have better success if you

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pound the clay soil before you start mixing, as it is apt to be very lumpy.

Now, for those who live on a shale soil! You have so many stones you will have to sieve your soil so as to get rid of them; and when you have enough sieved soil to fill one-third of your box, add humus and sand just as the "clay" people do. The sand soil people need one-half soil and one-half humus.

I can just hear some of you saying: "Where can I get sand? There is none near us, so I can't make any seed box." For a few pennies you can get a box of bird gravel (which is coarse sand), at the grocery or drug-store, and that will do splendidly. Again, I can hear some say: "I can't get any humus; there is no manure pile or compost heap or woods for me to get it from." Then don't forget your good friends who will sell you some from the beautiful valleys.

Still others I hear say: "I just can't get any soil like that at all—what shall I do?" If you will go to the florist's, he will sell you some potting soil for he makes all the soil he puts in his greenhouses just as I have told you how to make it.

After the soil and sand and humus are well mixed it should be sprinkled while you stir it. You will need to be extremely careful when you do this or

SOWING SEEDS INDOORS

you will have a mud-pie; just sprinkle a little water at a time for you will be just as badly off if the soil gets too wet as you will be if it is too dry. Now put it into the box on top of the drainage and spat it down with the palm of your hand; in the corners



MAKING GUTTERS IN A SEED BOX WITH A PENCIL

with your fingers. Save a little soil to put over the seeds when we plant them. Do you know why we spat it? So as to fill up the holes and make it firm for the rootlets. Give it a good watering and leave it over night; this will let the surface dry off a little bit and allow the soil to settle.

Now! We're ready for planting! Take a pencil

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and lay it across the box in a straight line with the end of the box and about an inch away from it. Press the pencil down gently so as to make a little gutter, now reverse the pencil (if it is sharpened) so that the gutter will be the same at both ends. Make gutters like this all across the box, one and one-half inches apart.

Cabbage and dahlia seeds need a deeper gutter than tomatoes and pansies. Next, sprinkle the seeds in the gutters—not too close together, always remembering each little plant will want some room to grow. Now sprinkle over them the soil we saved until the gutters are completely filled, then gently press the soil all over. This is to make sure every seed is safely tucked all snug in its bed that visions of blossoms may dance o'er its head.

You can plant tomatoes in one end of your box and cabbage in the other end, or a different kind of seed in each gutter, but never two kinds in the same gutter.

Keep the soil moist, but do not pour the water on or you will wash the seed out of the ground. The nicest thing to water with that I know of is a clothes sprinkler; it is an aluminum spray on a cork, which is put in a bottle of water. Shake this over your seed box until the soil is moist. Remember, if

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the soil dries out you will have no plants; if the soil is kept too wet the seeds will rot.



A CLOTHES SPRINKLER TO WATER YOUR SEEDLINGS

Our box must now be placed in a bright warm window so Madam Sun can help. Take a towel or rag large enough to cover the box, wring it out in warm water until it does not drip, lay this over the

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box and wet it whenever it becomes dry. This will keep the seeds just moist enough and you will not need to water the soil again until the plants start.

In a few days you will notice the ground cracking and soon your plant-children will raise their heads. Then we must take off the wet cloth and sprinkle the earth when it begins to dry. As the plants grow, turn the box every day or they will be crooked, for they always reach towards the light of the window.

Once a week scratch the soil between the rows of plants with the round end of a wire hair-pin or nail or match stick. This keeps it from getting sour and helps the plants to grow.

There is one trouble you will be very apt to have with house-plants, and that is aphid (pronounced affis). It is a tiny green bug so small you can hardly see it, but it has a sharp bill which it sticks into the leaves and stems and sucks the sap, which is to a plant the same as blood is to us. We cannot poison them because we cannot reach their food, so we have to murder them and the best way is to dust them with powdered tobacco, or make tobacco tea by steeping tobacco in hot water. When cold, sprinkle the tea over the plants. These little aphides multiply so fast you may have to fight them



APHIDES ARE VERY SMALL, BUT SO NUMEROUS THEY MAKE A PLANT LOOK
FUZZY

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very often, for each mother-aphis has hundreds of babies. It is not hard to fight when you know the enemy, and what will surely kill it.

You will notice as your plants grow older that they are beginning to crowd each other, and it is time they were either thinned out or transplanted. If you find you have more plants than you are going to need, you can take out every other one carefully, which will give those left plenty of room, but if you are going to need every plant, then you must move some of them.

You can use another box just like the one you planted your seeds in, or you can use earthenware or paper pots, or berry boxes, to move the plants into. Whatever you use, put drainage in the bottom and make the soil you are going to use just as you did for the seed box. When you put the soil into the pot or box or basket, raise it about 2 inches and drop it gently several times. This will settle the soil nicely. Be sure to have it full to the top. Now we are ready to "prick out" our seedlings. Make a hole with a pencil or your finger where the plant is to go and if you are transplanting them into a box, make the holes at least three inches apart; if in a pot or a berry basket, make the hole in the center.



IF YOUR SEEDLINGS GROW TOO TALL, PINCH OUT THE TOP CENTER LEAVES

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Now take a tooth-pick or a small stick in the right hand, the leaves of the plant in the left hand and gently pry the seedling out. Be very careful not to get the tooth-pick too close to the plant, and try not to break the roots or knock the dirt from them. Put the roots into the hole you have made and then press the soil firmly around it with both thumbs. After you have planted the first one you will know why I told you to jog the soil well. Water carefully and keep them away from the sun for several days until the roots have started in their new home. Then give plenty of light and *all the air you can without freezing them*. This is very important for if the plants grow used to a great deal of warmth they will grow tall and spindly and will be too weak to stand cool nights out of doors; but if you give them plenty of air, they will be bushy and dark green and strong enough to stand any weather. 50° is warm enough. If anything should happen that you cannot get them into the garden when you hoped to and they grow tall, just "pinch" out the top tiny center leaves with your thumb nail and finger. This will make the plant send out branches near the root and you will have stronger plants.

CHAPTER IX

SOWING SEEDS OUTDOORS

IF you have made a garden plan on paper keep it before you now, for it is wonderful how easy it is to forget. As a rule the directions for planting seeds are on each package, but here is a good rule to follow—if you buy your seeds in New York City, the directions on the package are for that section of the country. If you live in the South, you count how many miles *south* you are and allow ten days for each 100 miles. We will say you live 300 miles south of New York (remembering, not 300 miles away, but 300 miles south), then you would allow three times ten, which would be 30 days or one month, so if the directions say, "Sow the seed out of doors in May," you would sow them one month earlier, or in April. If you bought seed in the south and lived far north, you would do the opposite, plant later than the directions say.

This rule holds good except in sections of our country where planting continues through the whole year and along the Pacific Coast where the climate is affected by the Japan Stream. Nature,

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however, is always the best guide; watch the trees and feel the soil, and talk with successful gardeners in your locality.

We keep sowing vegetable seeds at different times; for instance, we do not sow beans at the same time we do radishes because beans need hot weather, and rot in cold wet earth, while radishes like coolness, so we have to "keep planting along" in our vegetable gardens.

Let us take a sample garden and I will show you how to plant it too. We will choose a bed 6 feet by 12 feet; this time we will run the rows the short way of the bed because we will have more varieties and will plant more times, and different kinds of vegetables take up different amounts of space. We will begin at one end of our bed—of course you have put on humus and forked it under and limed it if need be. If one end faces south or east, begin at that end because we are going to put short plants in here. If we saved that end for tall plants like corn, they would shade the shorter plants too much.

Make a gutter with a hoe handle, 18 inches from the south or east end (be sure it is straight). We will sow radishes in this, next lettuce, 18 inches further away, and next beets, 18 inches away. That is all we can plant while the weather is cool in this

SOWING SEEDS OUTDOORS

garden for you will see by the plan we are going to have beans, tomatoes and corn but they must be planted a little later.

The beans will be 18 inches from the beets, but the tomatoes and corn need more room so we will allow them two feet each. Don't you see how wise it is to make a garden plan on paper? You know just how much room you should give your plants and you can work so much better and more quickly because you have a picture of it before you.

Pat your radish, lettuce and beet seed in well, and mark the places for your beans, tomatoes and corn. Beans and corn can be sown as soon as the earth is a bit warm, and the tomatoes set out when all danger of frost is past.

Plant the beans two inches apart in the gutter you have already made and lay them "*eye*" down. This gutter should be at least as deep as the first joint of your thumb; if it is not, press the beans into the soil so they will be covered one inch when you have finished. If your corn is to be one of the smaller varieties, like Golden Bantam, you can plant it closer than a large variety like Evergreen.

We plant corn in hills, in a large field or garden, but in a small garden like ours we will plant it in a row, sowing two grains every three inches as deep

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as the beans, then when it comes up and is about three inches high, we will pull out the weak plants, leaving a strong one every six inches; this will give us all strong plants in a row.

The reason we plant so many grains and then pull out is because we want strong plants and all grains of corn do not make strong plants; in this way we can choose the ones we consider best. Whenever we speak of "thinning" we mean pulling out some plants because they are too thick. We do this when the plants have their second pair of leaves, always trying to leave strong husky plants to grow.

Some plants we pull out are good to eat; little lettuce, and carrots, and beets, and onions and swiss chard are good, but beans and corn and melons and cucumbers and such things are not. When I say "thin to six inches" it means start with a good strong plant, then measure six inches away to another plant, and pull out all plants between them. We would not have to do this if we were sure all the seeds would germinate, and make strong healthy plants, but as we are not sure we sow more seed than we really need and then pull up the extra plants.

The tomatoes must have $1\frac{1}{2}$ feet, for they spread into big bushes and need that much room in which to grow. When all danger of frost is over, make

SOWING SEEDS OUTDOORS

three holes in the tomato row with your trowel; the first one is to be $1\frac{1}{2}$ feet from the edge of the bed and the other $1\frac{1}{2}$ feet from its neighbor. Make a good big hole, larger than the pot or berry basket your tomato plant has been growing in, put a little humus in the bottom of this hole if you have it, then



SEEDLINGS GROWN IN PAPER POTS SLIP OUT EASILY WITHOUT BREAKING THE ROOTS. THESE TOMATO PLANTS ARE NEARLY READY TO BLOOM

a little earth on top of the humus and then plenty of water. Now take a tomato plant in the pot or berry basket (whichever you have grown them in), slip your left hand over the top of the pot and allow the stem of the plant to pass between the first and second finger, then turn it upside down and you can draw the pot or basket off the roots with the right

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hand. Carefully turn the plant right side up over the hole in which you are to set it. Draw the earth around it and press firmly, and your plant will be glad it is in the garden and go right on getting ready to make tomatoes.

You can choose for your garden any other vegetable and flower you wish, and have the garden any size you desire, but plant them the same. Here is a little planting table for the vegetables we spoke of in "How to Choose Seeds" that will show you how much room they need, then you will know how far apart your rows and plants should be.

Name	How far apart from last row	How far apart in a row
Radish	12 in.	thin to one-half inch
lettuce	18 in.	thin to 10 inches
peas	2 ft.	do not thin
beets	18 in.	thin to 4 inches
beans	18 in.	thin to 6 inches
lima beans	18 in.	thin to 6 inches
sweet corn	2 ft.	thin to 6 in. in rows; hills 2 ft. apart
pop corn	2 ft.	thin to 6 in. in rows; hills 2 ft. apart
swiss chard	18 in.	thin to 6 inches
squash	2 ft.	thin to best plant in hill
cucumbers	3 ft.	thin to two best plants
onions	18 in.	thin to 4 inches
carrots	18 in.	thin to 4 inches
muskmelons	3 ft.	thin to two best plants

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Name	How far apart from last row	How far apart in a row
watermelons	3 ft.	thin to two best plants
parsley	12 in.	thin to 4 inches
turnips	18 in.	thin to 4 inches
peanuts	18 in.	If you plant the nuts 6 in. apart they will not need thinning
tomatoes	3 ft.	plant 2 feet apart
cabbages	2 ft.	plant 18 in. apart
peppers	18 in.	plant them 12 in. apart
potatoes	2 ft.	plant them 18 in. apart

Melons and cucumbers are best planted in hills four feet apart. Sow several, say five, seeds in a little circle, then thin them out to the two best plants when the second leaves are out. You see you must choose varieties according to the size of your garden or as the old Proverb says, "Cut your coat according to your cloth," which means of course you cannot make a big long coat out of a small piece of cloth, so also there is no use trying to plant a lot of large plants or plants which need a lot of room in a small garden. If you happen to want the kind of vegetables that use more room than any of the others, and your garden is small, then plant only one or two varieties.

You will be surprised I have told you to allow 18 inches for radishes which are so very small, but I did this on purpose for the radishes will be ripe and eaten in about a month, then we are going to plant

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something else where they are now and this "something else" will need all that room.

Peanuts are such an interesting plant I am going to tell you about them especially.

First of all we do not eat peanuts until they have been cooked so if we bought some peanuts to eat and planted them instead, they would not grow. The tiny leaf and root germ in the nut was killed by the heat when they were roasted. We must buy peanut seed or "Raw Peanuts." The shell can be taken off the seed if you want them to germinate quickly and you are sure the ground is warm or you can leave the shell on—the moisture in the soil will soon split it so the stem and root can come out.

The plant makes a small bush with leaves something like clover and a blossom the shape of a pea blossom only it is bright yellow; many blossoms come on the bush at one time so the plant is quite ornamental. After the blossom drops its petals and the tiny seeds have been fertilized, the stem begins to grow long and turn downward; do not be frightened; the plant is only putting its seed baby to bed under the soil, for it will not grow unless it is put there. Just think of it, this plant is strong enough to push its blossom-stem right into the ground; of course if the ground is hard because it

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has not been cultivated often enough, the plant will have a hard time, but if it is soft and well cultivated, the plant can make more blossoms to make seed.

In the fall when the leaves of the peanut plant begin to turn yellow, just before frost, dig the whole



PEANUTS DO NOT GROW ON THE ROOT OF THE PLANT. NOTICE THE LONG STEM ON THOSE IN THE LEFT-HAND CORNER

plant up by putting your garden fork or spade into the ground near the plant and lifting. Now you will see the nuts hanging to the long stems; some people have an idea the nuts grow on the roots, but you will know better because you will have watched the blossom's stem go into the soil.

You will also see the nodules of nitrogen on the

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roots, for peanuts are really a pea, and all peas can take nitrogen out of the air, and store it in the roots, and so of course make very good plants to grow, for nitrogen in the soil is excellent for our crops and that from nitrogen-gathering plants is better than that from any other source. Peanuts love a sandy loam and lots of sunshine.

By this time you surely know what to do with the vines after you have taken the nuts off. Put them in the compost heap? Of course!

The nuts should be spread out and dried very carefully then stored in a warm dry place until you are ready to roast them.

To roast the nuts, put them in a baking pan and place in the oven for about 20 minutes, stir them often and do not have the oven too hot.

If you want to salt them, pour boiling water over the raw nuts after they have been shelled and let stand until the skins are soft and wrinkled, then pour off the hot water and pour on cold. Now you can easily slip each nut out of its jacket. Dry them, pour over them a few drops of olive oil or melted butter, sprinkle with salt, stir and put into a cool oven, leave them there until they begin to brown, stirring once in a while. My, but they are good!

CHAPTER X

THINNING AND TRANSPLANTING

I HAVE no doubt your seedlings are all up and you are wondering what to do next. This is thinning time so we will go over our crops in detail although you have your planting and thinning chart in "Sowing Seeds Outdoors." I think I can help you more if we take each crop separately and talk carefully about thinning it.

Radishes need our attention first; if you sow as many seeds as the usual small gardener your radish plants will be so close together they will not have any room to make a root large enough to eat. Very carefully pull out the extra ones, trying to leave a good strong plant every $\frac{1}{2}$ inch, then watch this crop every day for you will be surprised how fast they grow. They do not all grow the same size at once, so pull those that are ready each morning.

Are you wondering how you can tell when they are ready to pull? Carefully push the earth away from around the root of several; if the root is nice and fat, pull a plant up and then you can judge bet-

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ter whether they are large enough to eat. After gathering a few you will be able to tell very easily when they are the right size.

Next comes the lettuce. You remember I told you that our lettuce plants should be allowed plenty of room so they can make good big heads; therefore, we will begin thinning when the plants are three inches high. Take a stick 10 inches long and measure from the edge of the bed along the lettuce row, stick a burnt match into the ground at each end of the stick, then move it along so one end touches the last match, put another burnt match stick into the ground at the opposite end and so on until there is a match stick every ten inches in the lettuce row. The lettuce plant by each match stick is the one we are going to leave.

Now *very carefully* pull out all the other plants near these marked ones; when you have a nice dish of salad do not pull any more that day, but next day thin again and so on every day until no lettuce plants stand between those marked. You remember we eat the leaves of this plant so we must keep them growing rapidly that they shall not become tough. Cultivate (that means to stir the ground) around them every day and give them water if you should have a spell of dry weather. If you have good seed

THINNING AND TRANSPLANTING

and weather and give them good care, the heads should be round and firm, crisp and tender, and your family will say "nothing ever tasted so good."

Next to need our attention is onions; if you planted "sets" some of them have grown large enough to eat. Test them the same way as you did radishes, pulling only those that are large enough and leaving the others to grow a little longer. If you sowed seed, the tiny hair-like plants are no doubt up and you must watch very carefully that weeds do not get a good start among them; this work you must do on your hands and knees, and if the plants are very thick, pull some out while they are tiny, letting those that remain be about one inch apart. When these grow to be about the size of the "sets" or the radishes you pulled and ate, take out every other one, then they will stand 2 inches apart; in a week or so pull out every other one again. Then they will be four inches apart; now let them grow all summer, keeping them cultivated, but do not try to cover the bulb as it grows for onions must sit on top of the ground and will work and work to get out if you cover them. They will work so hard to get on top of the ground they will not have time to grow fat and so you will have a poor crop.

You will remember I told you long ago in "Seeds.

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and How They Germinate” that the beet is really a fruit, for three seeds are clustered together. For every seed you planted three beets are liable to come up, so you see, they will need much thinning. Start when the leaves are about four inches high and thin just as you do onions until they are four inches apart. You can use these tiny beets if you wish; they are very tender and delicate when cooked like spinach.

Carrots should be thinned the same way only they don't need more than three inches because they are not as large as beets.

Beans should be thinned until the plants stand six inches apart—do not do this until they are quite high if you have cut worms, because Mr. Cut Worm may help himself to a few; when the plants are six inches high it will be safe to do it. This rule applies to all beans, limas as well as string beans.

I told you about corn in “Sowing Seeds Out of Doors” but I will tell you again; if you planted in a row, thin the plants until the stalks stand 6 inches apart, if you planted in hills the hills were 2 feet apart and you should leave only two of the strongest plants in each hill.

Melons and cucumbers should be thinned to the

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two strongest plants, but we should leave only one squash to a hill.

Peas, as a rule, are not thinned at all, but it would be wise to do so if you sowed the seed too thick.

Now I want to tell you just a little more about transplanting: When you set out your tomato, cabbage, pansy, aster or any other plants you must do it with great care so the plant will not be stunted or set back in its growth any more than you can help. If the plant has been grown in a pot the roots and earth come out nicely in a good ball, but if the plants have been grown close together the roots become broken when we separate the plants.

I have no doubt many of you will buy tomato and cabbage plants, possibly many other varieties. These plants are grown in shallow boxes, called "Flats." The plants are apt to be tall and spindly with rather weak stems; it is because they have been grown where the temperature is quite warm and have grown too fast—really out-grown their strength as so many children do. Our problem is to make strong, healthy grown-ups out of these weak children, so we will give them extra good care for a week, when Mother Nature, who is always helping everywhere, will have done so much that

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our plants will be well on the road to robust health and strength.

Prepare the ground where your plant is to go by digging a hole larger than your roots need; then



SETTING OUT CABBAGE PLANTS. "PUDDLED" AND COVERED WITH BERRY BASKETS

fill the hole with water. Take a single plant and hold it in the center of the hole with your left hand; with the right draw the earth into the hole all around the roots and press it firmly. This is called "puddling" and is the proper way always to transplant because we put plenty of moisture under and around

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the roots, where they can draw on it as they need to. The next most important thing is to keep the plant covered with either a box or a flower pot, or berry basket or even newspaper, during the day. This keeps the plant shaded and cool and prevents the rapid escape of the moisture from the soil. When evening comes, remove the cover and lightly stir the soil about the plant but be sure to put the covers over them again the next morning unless it is raining. Keep this up for several days until the plants look strong again. The rain brings to our plants something we cannot give them from a watering can or hose, and it will do more to revive a transplanted plant than any other thing. Good gardeners always try to transplant either just before or during a rain. I have worked many and many a day in raincoat and Sou'wester and just loved it—rain and plants and gray sky and wonderful growing odors and the knowledge that the plants would be glad. I was not afraid I would melt if a drop of rain touched me.

CHAPTER XI

CULTIVATING

I HAVE told you why we spray, now I will tell you why we cultivate. It is for two reasons: One to keep the *weeds out*, and the other to keep the *moisture in*. We have talked about weeds and how they take moisture and nourishment away from our plants and give us nothing in return; now I want to tell you about the moisture in the soil that helps our plants to grow.

Have you ever noticed how the water sinks into the soil after a rain? Where does it go? Down, and down, until it reaches an under-ground river or a spring unless it is suddenly called back by the sun, which is ever pulling it out of the soil to pass away as vapor and form clouds to come again to the earth as rain or dew.

I suppose you wonder why we should care whether Madam Sun takes this moisture out of the soil or not. We care because it dissolves plant food in the soil. Now how shall we keep Madam Sun from taking it away?

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First we will see how she does it and then we can find a way to prevent her taking it all. Wise men tell us that water rises up in the earth through tubes or chimneys. The power to do this is called capillary attraction. As the moisture rises in these chimneys the heat of the sun turns it into vapor and it passes off into the air. You know if a brick were out on your chimney, the smoke could not escape, could it? Then let us put bricks on top of the soil chimneys. Now I can hear you laughing or your eyes are as big as saucers wondering what in the world, or out of it, I mean. Well, I really mean stop the chimney up so the moisture cannot escape, but these chimneys are so small a grain of sand to them would be as large as a brick to ours. And that is why we "stir the surface of the soil" to stop the sun and capillary attraction from taking away the soil water which our plants need. But dear old Mother Nature is such a worker and Madam Sun is up so much earlier than we that they will have new chimneys made before we have our breakfast, for Madam Sun wants that moisture for her clouds and Mother Earth will never stop making the chimneys, so we have to put bricks on top of them very often.

The hotter the day, the harder the sun is drawing soil moisture, which is a good thing for us in

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dry weather, for if the sun did not help pull the moisture up to the plant roots, or let any down from the clouds, our plants would die. But our



CULTIVATING WITH THE LONG-HANDLED CLAW. THE HOTTER AND DRYER THE WEATHER, THE MORE CULTIVATION IS NEEDED TO HOLD THE SUBSOIL MOISTURE IN THE GROUND

part is to keep the water from escaping into the air after the sun and capillary attraction have pulled it up from deep down in the soil. By stirring the soil often or "cultivating" often we keep the soil just under the surface very moist, but if we do not cultivate, the surface becomes hard and baked until

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finally the soil will begin to crack, and these cracks will grow larger and larger, allowing more and more moisture to escape into the air.

I want you to try this experiment this summer and prove to yourself that this is all true: When a hot, dry spell comes I want you to dig carefully in a well cultivated spot (and I do hope it will be your own garden) until you find the soil moist; then measure how far down it is. Now go to a spot that has not been cultivated at all or else but very little and measure again.

I proved it to myself one summer and found the moisture down one inch in the cultivated spot; but had to dig two feet in the uncultivated spot before I found one particle of moisture.

We can cultivate with any tool which will stir the surface of the earth; a stick, a hoe, a rake, a claw, or our fingers. Do not go too deep or you will break the fine feeder rootlets; just stir the surface and keep it always fine and powdery.

Now I am sure you see another reason why we should use humus in our gardens. We know it holds water like a sponge,—therefore if it is down in the soil where our plant roots are it will hold the “subsoil” moisture as it comes up. The soil moisture helps to decay the humus, which in turn forms gases

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which unlock the chemicals which are in all soil, and these are part of the plant's food.

Because Mother Nature has been kind enough to see that the rains and snows sink into the soil and that Madam Sun and capillary attraction bring them up again, doesn't mean that our gardens will have all the moisture they need, but it does mean that you can have a fine garden without watering *if* you cultivate often enough. If you do water your gardens this is a rule I do not want you to forget no matter how old or big you grow:

Water much and seldom,
Never little and often.

Give your plants a great, big, long drink until the soil is moist way down, then the roots will go down to where the soil is cool; but if you water a little until the ground just "looks pretty" the roots will come up to the surface for the moisture, then the sun will draw it quickly away and leave the tiny roots burnt and dry and you will wonder what is wrong. If you water thoroughly, once in several days will be enough, but of course you must cultivate just the same.

If you have to carry water to your garden always try to have two buckets or watering cans so you

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can carry an even load on both sides; it is much easier to carry six quarts in two hands (three quarts in each hand) than four quarts in one hand, and of course saves time.

CHAPTER XII

WEEDS AND COMPOST

WHAT is a weed? It is a plant out of place. Many of our most choice flowers are weeds in other countries. Geraniums and cosmos and Calla Lilies are weeds in Mexico. We generally think of a weed as some plant which comes up very fast and very often and there are lots and lots of them, yet some of our flowers are weeds because they insist on crowding other flowers out and coming up where we do not want them—so a plant in the wrong place is really a weed.

I presume our worst weed the country over is grass. There is one kind that is particularly bad because it needs only the tiniest piece of root or stem to start a new plant. Then there is “sorrel” or “sour grass” which sends out long stems just under ground, making new plants every few inches. Another bad weed is “pusley” or “purslane”; it has a thick stem and fat leaves; sits close to the ground and will spread out in a circle as large as a dinner plate. “Daisies” are bad weeds in some parts of the

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country, "thistles" in others, "groundsel," "pig weed" (or "Red Root" as it is sometimes called),



GRASS IS OUR WORST WEED BECAUSE IT REQUIRES ONLY A LITTLE PIECE OF ROOT OR STEM TO MAKE A NEW PLANT

"Shepherd's-purse" or "pepper grass," "plantain" and "mullen" and dozens of others come to take up room in our gardens which we want for more useful



SORREL, OR SOUR GRASS, SENDS OUT LONG STEMS UNDER GROUND, MAKING NEW PLANTS EVERY FEW INCHES

or beautiful plants, so we must remove them. This is called "weeding."

There are two ways of weeding, one good and the other poor. To actually get rid of a weed we

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must take it out "root and branch," and the way to do this is to loosen the soil all around and under the weed, then pull it out. A hand fork or trowel is the best tool to do this with; push either one into the ground slant-wise, near the weed and lift; if



PUSLEY, OR PURSLANE, HAS A THICK STEM AND FLAT LEAVES; SITS CLOSE TO THE GROUND AND WILL SPREAD OUT IN A CIRCLE AS LARGE AS A DINNER PLATE

it does not come loose the weed has a tap root and goes down deep into the soil like a carrot. Then you must push the tool straight into the ground until the root comes free.

Get down on your hands and knees and go after each weed, taking it out completely and put it into the basket or box; when you have finished haul them

WEEDS AND COMPOST

entirely away from the garden, dump them in a pile, always taking your weeds to the same pile. Later I will tell you why.

The poor way to weed is to chop off their heads with a hoe, for weeds are not like people and do



GET DOWN ON YOUR HANDS AND KNEES AND GO AFTER EACH WEED, DIGGING IT OUT COMPLETELY. PUT THE WEEDS INTO A BASKET OR BOX AND CARRY THEM TO THE COMPOST HEAP

not mind so much if they are beheaded; they can grow another head. You see they are very much like crabs and lobsters—if they lose a claw, they just go in hiding until another grows in its place. Some weeds grow stronger and larger the more you chop their heads off, and some make more new plants if you chop them up, so you can easily see how much better it is to dig them out.

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There is an old saying which reads, "Weeds are the farmer's best friends," which seems strange, does it not? yet it is true as true can be, for if we did not have the weeds to take out we would not stir the



DOCK HAS A TAP ROOT AND DEEP DIGGING IS NECESSARY TO GET IT ALL OUT

soil and close the chimneys as often as we ought, to prevent the escape of sub-soil moisture. Every time we weed we cultivate, so that is what the saying means, weeds *make* us cultivate.

When you thin your crops, whether flower or vegetable, you must consider these plants as weeds

WEEDS AND COMPOST

for they are out of place because they are overcrowding. The fact that we eat them does not make any difference because we eat dandelions and dock and lots of weeds. So be brave about thinning and give the plants which are to stay plenty of room.

Now about those weeds we dumped in a heap. Choose some out-of-the-way spot and add any other weeds, grass cuttings, and leaves that you can get hold of. Pour a can full of water over this once in a while and turn the pile over with your garden fork. The water and turning help it to decay, which is turning it into humus for your garden next year. This pile of weeds is just as good as money, for it will save buying or hauling humus next year. If you keep chickens or pigeons, the cleanings from the hen house or pigeon loft can be added to your pile, which will help enrich it. You see we are going to put into Mother Earth the things we took from her—then she will not grow poorer but richer every year. This is wise and economical gardening; every such gardener will make our glorious United States one of the finest, richest countries of the world.

CHAPTER XIII

SUMMER MULCH

THERE is another way to hold the moisture in the soil besides cultivating, and that is to cover the soil around the plants with a mulch of grass cuttings, or weeds, or straw, or dead leaves or anything light which will prevent nature and the sun drawing the moisture out through the capillary tubes. This mulch is more than a "brick on the chimney." It is a blanket on the roof covering chimney and all.

The summer mulch is a very, very good thing for people who are working on a clay soil, for clay soil is heavy, hard to cultivate, gets very stiff after a rain so you cannot cultivate for several days, then begins to bake and crack and you have a hard time generally. If a mulch is put around the plants or between the rows the moisture dries out more slowly and the soil will not bake so hard. Several days after a heavy rain it is wise to move the mulch, give the earth a good cultivation to let in light and

SUMMER MULCH

air so the soil will not become sour, then put the mulch back again.

You will be surprised how this mulch will disappear. It dries and blows and rots, so you have to keep adding a little each week—but it is so easy if



DUST MULCH AND STRAW MULCH

you live where there is a lawn for grass cuttings make the very best mulch there is. I can just hear some of my wise friends saying, "But when the weather gets dry and hot the grass does not grow much and we cannot get any cuttings for a mulch."

Ah—then begin to save the cuttings as soon as the lawn starts! Do you remember I told you how

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careful we must be to make a compost heap of all weeds and grass? Well, it will help lots if you are going to use a summer mulch.

Have you ever happened to turn a stone or log over on a hot summer's day? Did you notice how moist and cool the soil was under it? That is just the way we want to keep our soil—moist and cool so the rootlets will not dry up and die. If you are very anxious to try a summer mulch (and I sincerely hope you will want to try many things to prove them to yourself) and cannot get grass cuttings or anything of that kind, and can get stones—try them around your plants, not too near the stem of course, but covering the ground enough to hold in the soil moisture. Medium sized flat stones would be best of course, though they do not grow in all places. My shale-land friends can get plenty of them very easily, I know. Be sure and move the stones every few days and stir the soil underneath. If we did not do this the fungus diseases and insects would have a fine place in which to grow and we do not want that.

When we cultivate often and keep the soil fine and powdery on the surface we call that a "dust mulch" as it is preventing the soil moisture from es-

SUMMER MULCH

caping, and we put a mulch of dust on the surface instead of grass cuttings or compost.

All our plants are glad of a mulch but I know of none which like it as well as sweet peas; they need their roots cool and moist all the time. One summer I tried the experiment of seeing which kind of mulch they liked best—grass or dust. I covered the ground both sides of a row for six inches with a heavy coating of grass cuttings, the next row was cultivated every day by simply drawing the rake over the ground each side of the plants. The soil where I live is sandy loam and the sweet peas did best with the dust mulch.

Dahlias, gladioli, beans, peas, everything that grows tall loves a mulch—either a covering of some sort or a dust mulch (which of course means frequent cultivation). If tomatoes and melons and cucumbers are trained up, they need it, if they lie on the ground they make their own mulch by shading the soil. Nasturtiums, pansies, sweet alyssum, verbenas, eschscholtzias, parsley, all shade the ground very well themselves though they need to be cultivated, too; but they do not need it as much as tall growing plants.

I have tried the experiment of growing one of the low growing plants beside a tall growing vine

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to see if the small one would care for the large one. They did very well, but not as well as frequent cultivation. Eschscholtzias (California Poppies) and dwarf nasturtiums planted close to sweet peas and dahlias shade the ground very well; but we must not forget that they are taking food and moisture from the soil, too, so our garden soil should be pretty rich in humus and the plants should receive plenty of moisture if we want to grow two kinds of plants so close together.

You will be much interested in your corn if you have never grown it before and will probably try very hard to keep the roots covered unless you know that those big strong roots which sprawl out all around the plant are not feeders, but only bracers. Some kinds of corn grow so tall (18 feet in some places) that the winds would easily blow them down if wise Mother Nature had not done some civil engineering and given them a big strong brace near the roots. So do not try to cover these roots up and pile the earth around the stalk for the plant will have to spend time and strength sending out new ones higher up for a new brace. But do cultivate often or put on a mulch, for corn needs to grow quickly in order to make good tender ears. The feeder roots go down into the soil and spread out

SUMMER MULCH

quite a distance. That is why farmers sometimes put humus in a hole in the hill and cover it with earth before they plant the seed, so the roots will find food when they go down, and so moisture will be held there for them.

CHAPTER XIV

FOLLOW-UP PLANTING

By this time many of you have harvested your radishes and the ground is ready for another crop. What shall we put in? Tomatoes, or cabbage, or lima beans, or potatoes, or swiss chard; in fact, anything you choose can now be planted in this row.

If the soil is packed down hard when you have the radishes all out, it would be wise to fork it over before you make a new gutter for the new seed.

Lettuce and onion sets will be the next crops out. These rows will look a little ragged while you are pulling the crops, but never mind—a market garden generally does look ragged—our object is to get as many good vegetables from our garden patch as we can, and to do this we must think ahead.

Suppose you had decided to put tomatoes or beans, or corn, or cabbage, or collards, or swiss chard in these rows; by carefully considering how far apart these new plants are to stand you could set them in their places before all the early crops have

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been pulled; in this way you would be able to gain quite a little time on the new crop. Some gardeners are so choise of their land and so careful it shall not be idle one moment, they carry seeds in their pockets, and when they pull up a plant like lettuce, or some young carrots, or such early things they put a new seed (always of a different vegetable however) in its place.

Now, why do these gardeners put a different kind of seed in these places? Because each variety of plant seems to take a little something different out of the soil. If we grow one crop, like corn or potatoes or beans or pansies or asters or dahlias, or in fact anything, on the same piece of ground for many years in succession, they get poorer and poorer and the bugs and diseases get into the soil and stay there, feeling sure they will find their particular pet crop to feed on next year. But if we change our crops, the bugs and blights do not find what they are used to and we have a better chance to control them, and the soil is kept in better condition.

Here is another reason for a garden plan—always date one and make notes upon it as the season goes by—for instance, we will mark on our plan where it says radishes “followed by cabbage” and where it says lettuce “followed by swiss chard.”

FOLLOW-UP PLANTING

When you are making your plan next winter you will be able to shift your crops around and so keep the soil in good condition.

Peas and beans are soil builders because they have the power of taking nitrogen out of the air and storing it in their roots. If you can dig up a pea vine or bean plant when it is quite large you will see little lumps on the roots. If you did not know you might think these were signs of a disease. They are really storehouses called "nodules." Peas and beans seem to take a good deal out of the soil too in the way of plant food, but when the roots begin to decay, after the plant has lived its life, they give this nitrogen to the soil, making it richer than it was before. So save every bit of pea and bean vines for your compost heap.

Later on I am going to tell you more about crops which enrich the soil so our gardens will grow better and better each year.

CHAPTER XV

IRRIGATION

EVERY ONE nowadays is talking about "irrigation." Those who live in certain parts of our West and South know well enough what it means, for without it there would be no food, nor flowers; but some of my Eastern and Northern friends may not know that it means giving to the earth water that does not come directly from the clouds. We usually call it "watering the garden."

You see, some parts of the earth have frequent rains or snows all through the year and this is stored up in the soil for plants to use. Other parts of the earth have rain every day for part of the year and no rain at all for the rest of the year. Still other parts almost never have rain, so it is necessary to give the earth water somehow and this we call "irrigating."

Where I live we have 54 inches of moisture a year, which is a good deal, and it comes usually once every week or so, sometimes as rain, sometimes as snow. But sometimes it does not come for several

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weeks at a time, then we say we have a drought. If people have irrigation it does not matter *so much* because they can cool the earth and give their plants a drink; but all the irrigation in the world will not do our plants as much good as water from the clouds, because nature sends something to our plants with her rain drops that gives them new life and vigor. We do not know what it is; some people say electricity, others ozone; but whatever it may be, a 10 minutes' shower will do more good than one hour of irrigation.

There are three ways of irrigating—under the ground, on the surface of the ground, and overhead. The underground way is to allow water to run through porous, loose-jointed pipes buried under the plant; the water leaks through and so makes the ground moist. When we irrigate on the surface we dig trenches between the rows of plants and fill these trenches with water which sinks down into the soil. Watering with a water can or a hose is overhead irrigation; in large gardens the water runs through pipes set on posts and a fine spray of water comes from the pipe every few feet.

People think many ways about this problem, and each person thinks he is right. I think overhead irrigation is right because that is the way nature

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gives it. The water cools the air about the plants as well as wetting the soil and washing the leaves. You know plants are just as grateful for having their faces (leaves) washed as you are for a swim in the brook or ocean on a hot day.



OVERHEAD IRRIGATION WHERE WATER COMES FROM A PIPE IN FINE SPRAYS

There is one thing, though, that all people agree upon and that is “water plentifully when you do water,” no matter whether the water goes underground, on top of the ground, or through the air. Most of you will water either in ditches on the surface of the ground, or with a sprinkling can or a hose. Few of you will have pipes through which

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the water can spray unless you are on a place which already has this system; then I am sure a line of pipe can be put up for your garden.

If you are in a part of the country where you must irrigate by ditch, make troughs in the ground between the rows of plants with your hoe and allow the water to run into these troughs for an hour. Then, when it has sunk into the ground, draw the earth back into the ditch so the surface will be level again. The reason we draw the earth back is to make the garden look well, and to cover the very wet surface so it will not bake and crack and so let the moisture out.

If you water by a sprinkling can, hold it as high as you can without hurting yourself or get an old box or chair to stand on. Wet the plants down thoroughly, give them a good long drink, even more than you really think is enough, because you want the water to go down deep into the ground to draw the roots down. If you water with a hose, stand far off and let the spray of water rise in the air, then fall on to your plants, and be sure to wet the ground thoroughly. You see, we want to get as much air mixed with the water as we can, also have the water, which is usually cold, become slightly warmed by passing through the warm air.

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If it is possible do your irrigating in the late afternoon or evening, because the freshness and darkness of night will be helping your plants too; but if you cannot, then water in the early, early morning before the heat of the day arrives. If you cannot do it at either end of the day you may do it at another time, but you will have to be more sure you give them a lot of water than at either night or morning, because a little water would only burn your plants up by drawing the roots to the surface, where the sun could scorch them.

It is always wise to cultivate the soil as soon after irrigating as you can do it and not make the soil lumpy. Sandy loam can be cultivated the next day or the second day after, but clay and shale soils must stand longer before they can be cultivated. A heavy wetting packs the soil down tight, doesn't it? Then the hot sun dries the surface, it begins to crack, and the moisture you sent away down so the roots could have it will escape through the cracks unless you fill them up. So cultivation after irrigation counts more than two irrigations, because it is putting the soil into better condition. Always watch the condition of your garden soil and try to make it better every year. Potters cannot make fine dishes or beautiful vases unless their clay is in good condition

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and they will work a long, long time to get it into good condition before they begin work. Each year we add humus to our gardens and every time we cultivate, we are putting our soil into better condition. You will have a feeling that you are not only growing good and beautiful crops, but that a little patch of this great round world will be better because you have lived and worked. Nothing counts so much to each one of us as the fact that we are going to leave the world better than we found it, both through our character and our work.

I am going to tell you in "How to Produce Larger and Better Fruit and Flowers" about a half barrel sunk in the ground and filled with manure. Holes had been bored in the barrel all around the sides, and when water was poured into the barrel it ran out of the holes, feeding the roots of the plants which were growing around the outside—well, this is really irrigation as well as feeding, isn't it? It is underground irrigation because the moisture reaches the plants from underneath. If you had a long drought it would be wise to sprinkle the plants once in a while as well as pour water into the barrel, because plants are so grateful when their leaves are washed. In the olden days all the dish water and water from Monday's washing was

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poured into the barrels. This water was of course soapy and you might suppose the soap would hurt the plants, but not so; it helps them. Soap is alkali, which means "not acid," and so it would sweeten the soil the same as lime. Soap also kills many bugs,



WATER Poured INTO A HALF BARREL FILLED WITH HUMUS WOULD MAKE UNDERGROUND IRRIGATION, BECAUSE THE WATER GOING THROUGH THE HOLES IN THE BARREL WOULD REACH THE ROOTS OF THE PLANT

so if you can put dish water around your plants do so. But always pour it on the ground and do not sprinkle it on the leaves, for the soapy water might injure some of them.

I wonder if you know why plants are grateful for clean leaves. Because they breathe through

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their leaves as we breathe through our noses. There are little pores (holes) in the leaves through which they breathe and when these are choked up with dust the plant cannot grow so well. Just suppose our noses became choked with dust and we had no mouths to breathe through, we would be very uncomfortable and unhealthy people I am sure.

Oh, it is such fun and happiness to take care of our plant friends when we know what they need and what they do and how they grow. As I walk among mine I can almost hear them talk to me and to each one I have a different little greeting. I feel perfectly sure they know and love me. I hope you feel the same.

CHAPTER XVI

HOW TO PRODUCE LARGER FRUIT AND FLOWERS

TOMATOES, squash, pumpkins, and melons are really fruits. We call them "vine fruits" because they all grow on a vine.

Perhaps many of you know how good orchardists and vineyardists take off much of the small imperfect fruit when it is about half ripe. This is called "thinning" and is done for two reasons, one to get rid of small imperfect fruit that would not sell for enough money to pay for the picking; the other reason is so all the food now going into this poor fruit can go to the good fruit and make it larger and better.

Vines do another thing that requires much sap or food. They make long runners on which there is often no fruit at all, but sap has to be sent to them to feed leaves just the same; so we take off some of the runners and sometimes some of the tiny fruit too; then what is left grows very large.

If you want very large tomatoes, cut the vines off

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three joints *beyond* where the cluster of tomatoes is hanging and if there are a great many tomatoes in a cluster, carefully cut out every other one. You can easily see that if they are crowded when they are little they will be dreadfully crowded when



IF YOU WANT LARGER TOMATOES, CAREFULLY CUT OUT EVERY OTHER ONE IN A CLUSTER WHEN THEY ARE SMALL. IF CROWDED WHEN LITTLE, THEY WILL BE DREADFULLY CROWDED AND MISSHAPEN WHEN GROWN UP

grown up, also they are apt to be crooked and flattened because they will press against one another.

Melons are very queer and interesting because they have Father and Mother flowers separate from each other. Usually the first flowers to open are Father flowers and have only stamens with pollen on

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them; they have no seeds at the flower base. The Mother flowers always have a little bulb at the base of the petals and these are seed babies waiting for the pollen to come from the Father flower to wake them to life. You will soon be able to tell the blossoms apart I am sure. No doubt you are wondering how the pollen gets from the Father flower to the Mother flower. The winds blow it and the bees carry it on their velvety legs and backs. Indeed, if it were not for our busy bees we would have very little fruit in the world. So be sure you never harm a bee. Ants also help a lot and are good friends of the gardener.

If you want larger melons and squashes, cut the branch off three joints beyond the Mother flower after it has faded and the little fruit begins to grow. You see all the food of this stem will go into the one fruit.

Cucumbers we treat the same as melons. You can see the tiny cucumber at the base of the Mother flower even before the bud opens.

I want to tell you of another one of our garden plants that has Father and Mother flowers though I do not believe you would ever guess it. Corn! The tassel is the Father flower and the silk is the Mother flower. Each silk thread is attached to a

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tiny grain of corn inside the husk; if the pollen grains on the tassel do not fall on the silk and touch the end of each silk thread, the grain of corn at the other end will not grow. Pollen from corn tassels has been known to blow several miles and fall on the silk of another field of corn. Of course if the pollen blows from Black Mexican corn and falls on the silk of white corn, the two kinds are "crossed" and the seed children will be both white and black.

I have known some gardeners who had heard about pruning vines and thinning fruit, thought it would be interesting to try on corn. They cut off the tassels with the idea it would throw all the strength into the ears. They did not know what they were doing, did they? Imagine their surprise when they found only a few grains of corn on each ear! They would not have had that much if some neighbor's corn had not been in "tassel" about the same time.

The principle is the same with flowers, if you want large blossoms you must allow the plant to have only a few, so you pick off many buds. Did you know that is the way florists get such huge chrysanthemums? They allow a plant to have only one blossom, picking off all the buds except



SEE THE BULB AT THE BASE OF THE MOTHER FLOWER AT THE RIGHT! A
FATHER FLOWER IS STANDING NEAR THE CENTER

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this one as fast as they appear. You can do the same thing with your flowers if you wish; every kind will respond, because it is only natural that when all the food goes to one blossom it will be larger than if the food is divided among many blossoms.

You can also help make large fruit and flowers by giving the plant extra food at blossoming and fruiting time. The best food is liquid manure. It is made by putting a bag of manure into a barrel of water and letting it soak for several days. Then take a half bucket of this (if it is very dark brown) and fill the bucket with fresh water. If it is light brown use $\frac{3}{4}$ of a bucket of manure water and $\frac{1}{4}$ of a bucket of fresh water. This will dilute the manure because it is wise not to have it too strong. Pour some around each plant or on both sides of the row, not too close to the stems but so the feeding rootlets can get it. Give your plants a dose of this once a week for several weeks. You will see the leaves grow a rich dark green and the fruit and flowers increase in size.

If you cannot get manure water you may use nitrate of soda, but you will have to use it very, very carefully, else you may burn your plants. Nitrate of soda comes in crystal form and is dis-

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solved in water. Put one teaspoon of nitrate of soda into one quart of water and stir until it is all dissolved. Be sure you do not get it too close to the plants. Nitrate of soda is a chemical and when dissolved in water will give to your plants just what our peas and beans and clovers take out of the air; so these plants do not need it as much as the plants which cannot take it from the air.

You may use chicken or pigeon droppings. Mix them with four times as much soil (we will say one bucket of droppings and four buckets of soil). This must be mixed very thoroughly and allowed to stand two weeks or more so some of the ammonia can escape. It is a very strong plant food. When it is ready spread some around each plant or between the rows and rake it into the soil. Use this only once a month, as it is not used up by the plants as quickly as either liquid manure or nitrate of soda, but keeps on dissolving for a long time.

An old fashioned way to grow melons and cucumbers was around a half barrel which was sunk into the ground and filled with manure. Holes had been bored around the sides of the barrel and all the dish water and waste water from the house were poured into the barrel as I have already described. You see the water would absorb some of the manure

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before it ran out of the holes and this fed the roots of the vines. This is a very interesting way to grow plants and I hope some of my friends will try it some day.

There is one thing we have to be careful about: If we feed our plants a lot of liquid food when they are young they are apt to make too many leaves and too much stalk and not enough fruit and blossoms. Lettuce, parsley, cabbage, collards, and all plants whose leaves we want to eat, can be fed often for the faster the leaves grow, the more tender they will be.

There are many varieties of vegetables, fruits and flowers that naturally grow larger than others. For instance, "Ponderosa" tomatoes are much larger than "Bonny Best," and all the liquid food in the world will not make "Bonny Best" as large as "Ponderosa." "Giant Gibraltar" onions will always be larger than "Silver Skin onions," "Canada Muskmelons" will always be larger than "Rocky Ford," "Show" dahlias are always larger than "Pompon" dahlias, a "Giant Russian" sunflower will always be larger than a "Seedling of Stella" sunflower. But remember the largest is by no means always the best. Also remember that care, cultivation, water and food will always make your

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crop of any variety larger and better than the ones which do not get it.

I do not want you to feel for one moment that you must have either liquid manure or nitrate of soda in order to have a good garden. These are only helps and are especial helps when the weather is very dry, because both of them water your plants as well as feed them.

CHAPTER XVII

LATE CROPS

Now comes the time when we must begin to think of late crops—vegetables which will grow when the nights are cool, and will give us food late into the fall. Some of our crops have already ripened and have been taken out, and others will soon be ripe, so there will be many empty spaces.

By this time you surely see how our gardens can be made to work all the time, how we can plant a new crop after one has been harvested and then still another if there is time and growing weather enough. In the row where radishes grew in the early spring we could have beans after them. When the beans are done we can plant spinach, so this one little strip of land can grow three crops in a single season. This is good gardening, and is sometimes called “intensive gardening” because we make the land work all the time.

There is another way to keep our crops coming along fast without waiting for one crop to be entirely ripe, and that is to plant a second crop right



SPINACH CAN BE GROWN AS A LATE FALL CROP OR WINTERED OVER, BY COVERING WITH LEAVES OR LITTER, TO HARVEST IN THE SPRING

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in the same row, or close beside it. Let us think for a moment about lettuce: You remember it was thinned so each plant was ten inches from its neighbor. We can set tomato plants or cabbage or celery or Brussels sprouts or egg plants or sow seeds of corn or beans or limas in these spaces before the lettuce is ready to harvest. They will grow slowly at first and not need much room, but when the lettuce comes out the row is already occupied by growing plants and no time has been lost. Let us suppose we had planted beans between the lettuce. By this time the beans are bearing a crop and in a short time the beans will be done and ready to come out. Now we can plant another crop just beside the beans. Let it be sweet corn—an early variety like Golden Bantam because it grows quickly. If we plant some grains of corn between the bean plants, every two feet, these will be growing when the beans are done.

Let us use another example. We will suppose our radish row is going to be re-planted. When the radishes are just up out of the ground, we could set out early cabbage plants every 18 inches; they will go right on growing when the radishes are all pulled out. Early cabbage plants will be ripe in July, and after they are harvested we can sow tur-

LATE CROPS

nip seed in the same row; after the turnips are harvested we can sow spinach in the same place. The spinach will live over the winter and be an early crop next spring. So you see we have grown four crops on one single row of our garden plot.

There are many combinations you can work, and this is one thing that makes gardening so pleasant. We can always scheme new schemes.

Late crops that we can have are carrots, beets, corn, radishes, turnips, lettuce, spinach, cabbage, and Brussels sprouts. By late, I mean we can plant them late in the season and still get a crop. At my home on Long Island we can plant these vegetables as late as the 4th of July and get a crop. You remember I told you some time ago how to reckon this; ten days for every 100 miles north or south. If you live 100 miles north of here your season will be ten days shorter, and you may not be able to grow some of these late crops. If you live 100 miles south your season will be ten days longer, and you can surely grow all of them.

Spinach can be planted two weeks before the first white frost, then when the ground becomes frozen, cover it over with some straw or hay and leave it all winter. Next spring remove the covering and you will have a very early crop.

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Carrots and beets planted late will not grow very large, but they are plenty large enough to eat; and if you have more than you can eat in a short time they can be packed away in dry soil or sand in a cool place and will keep all winter. Lettuce and radishes will grow in the cool weather of fall just as they do in the cool weather of spring; cabbage and Brussels sprouts do not mind frost at all. In fact Brussels sprouts are better after they have been frozen. Cabbage can remain in the garden until the nights are very cold, or until we have a black frost, then take them up and store away where it is cool.

CHAPTER XVIII

HOW TO PICK VEGETABLES

FIRST of all it pays to pick vegetables very carefully, just as it pays to pick flowers carefully, and for the same two reasons, we do not wish to injure either the vegetable or the plant on which it grows. Quick, rough pulling is apt to break the vegetable or fruit and also apt to break the plant and loosen it in the soil. Make up your mind that you are going to take time enough to do it right even if you have to get up a little earlier, which is such a hard thing for so many of us to do.

First we must have some idea what our vegetable looks like when it is ready to pick; perhaps a vegetable is new to you; you have never seen it growing or eaten it, then of course you want to know how it should look when ripe. Ripe is a queer word because it has two meanings. It means "ready to pick for food" and it also means "ready to pick for seed." Of course we have to decide whether we are going to use our plant for food or for seed. A few of our vegetables are ripe for seed and ripe for

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food at the same time. But we will talk now about vegetables being ripe for food.

I have already told you how to pick radishes. But never mind, it won't hurt us to think about it again. First move a little dirt away from around the root of the radish plant with your finger; if it is a round radish like Scarlet Globe and you feel a bulb about the size of a marble, it is ripe. Take all the leaves of this one plant between your fingers, and pull gently sideways until it comes out. If it is a long radish like icicle, try to get the top of the root as well as the leaves between your fingers, then pull. If it comes hard, give a gentle twist. Radishes should be firm and crisp, not soft and punky. If they are punky or spongy in the center, you know that they are past ripe, or have grown too slowly (radishes should grow quickly), or the variety is not a good one for your soil and climate.

Lettuce, like radishes, must grow quickly and needs cool nights to be very fine. You surely know by this time that much cultivation helps things grow quickly. There are two types of lettuce: One forms hard heads with the leaves curled tightly around each other and is known as "head lettuce"; the other has loose leaves, which do not form a hard head, and is known as "loose leaf lettuce."

HOW TO PICK VEGETABLES

Most people prefer the first named because the tightly curled leaves in the center are light in color (because they have not seen the sun), and are usually very crisp and tender.

If you have head lettuce, press the center gently to see whether it is hard or not. If it is soft like a rubber ball you will know it needs to grow a little longer. When the center is firm, the lettuce is ready to pick. Use a sharp knife and cut the stem of the plant just where it comes out of the ground; or take the head in both hands, gather all the leaves up carefully, placing both hands under the head, then twist until the whole root comes loose. Never pull, for you are liable to break the crisp brittle leaves. If you have loose leaf lettuce, you will know it is ready to pick when the plant has grown large and full in the center.

Lettuce sometimes "goes to seed" before it is really good to eat. That means the plant is so anxious to make seed it sends up a blossom stalk from the center before the leaves are ready to eat. When the blossom stalk comes the leaves turn bitter, and tough. The secret of growing good lettuce is much cultivation and enough water to keep it growing fast all the time. Almost no lettuce will do well during the heat of mid-summer so we grow

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it in the spring and fall. Cos lettuce or "Romaine" is one of the few varieties which do fairly well in summer.

Peas are ready to pick when the pods are well filled. You know this vegetable is a seed, so we allow the plant to bloom, then pick the seeds before they grow hard. The best way to tell is either to gently press the pod, or hold it so the light can shine through. If you still are not sure, pick a pod, and open it, then you will have an idea how the pod should look when it is ready to pick. Different varieties of peas look very different in the pods; some pods look long and slender when the pea is ready to eat; others look so fat you would think the peas were ready for seed. Always pick the pod with the stem, take it between your fingers where the pod joins the stem and break upward or else cut them with scissors or pruning shears. Peas are hard to pick because the vine breaks so easily. Use two hands and be careful.

Beets are tested as we test radishes, by feeling to see if the root has grown large and fat. It is better to use a digging fork if the soil is hard and baked, but if it is soft and loose pull the whole plant up just as you did radishes.

Beans, like peas, are hard to pick because they

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are apt to break in two if you do not take hold of them close by the stem. Pull upward and the stem joint will break. Beans are ready to use when they are crisp and plump and before the seeds be-



GRASP BEANS CLOSE TO THE STEM WHEN PICKING, AND BEND UPWARD.
THE STEM SHOULD REMAIN ON THE BEAN

gin to grow large inside. If you prefer green shell beans, allow the seed to grow larger, but pick them before the shell grows hard and brown. Take the beans out of the shells, which are now too tough to use. The green variety beans are green when they are ready to use, but wax and butter bean pods or

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shells are yellow. If you do not pick your beans when they are ripe for food, the plant will stop blooming, but if you pick them as fast as they are ready, the plant will make more blossoms and you will have more beans.

Limas are queer seeds; the best way to test them is to hold them to the light and see if the seeds are large enough to eat; bend the pod upward and pick with the stem on the pod.

Sweet Corn hangs a sign out when it is ready to use for food. Its silk turns brown as it begins to ripen. First the tips, then up the silk toward the ear; when the silk is brown all the way up to the ear, you will know it is ready to pick. Some people strip the husk down and look at the grains; if they are not large enough they smooth the husk back into place, but this is not a good thing to do because the air gets in and the corn grains dry and shrivel. Use two hands when picking corn. Grasp the corn stalk with the left hand, the ear with the right, then bend the ear down and twist. Never husk corn until you are ready to cook it and try to pick it as near cooking time as possible. "Out of the garden and into the kettle" is the way to have perfect corn.

Pop Corn is used when it is ripe for seed; the

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silk becomes black and disappears and the ears remain on the stalk until well into the fall. Then they are taken off, the husks stripped back (but not taken off entirely), the ears tied together by the husks, and hung in a cool dry place. Pop corn "pops" best when a year old, so if you can save some over a year it will delight you. It never pops well the first year until it is thoroughly dried out.

Squash should be picked when about half grown, that is summer squash, like Marrows, Crooknecks, and Patty Pans. Summer squash should be picked before the skin gets hard; you can use your thumb nail to test them; if you cannot scratch a mark you will know they have been on the vine too long; if they are firm and plump and have not turned a dark color and scratch easily they are ready to pick. Use a knife to cut the stem. Winter squashes stay on the vine until frost.

Cucumbers are picked when very small for pickles and when large but still tender for slicing. You can test them by scratching, but the color tells you very well. If they are the least bit yellow, they are too old. Always cut the stem with a knife or shears. Do not try to pull them off the vine.

Onions are pulled when very young when you want bunch onions or "scallions," but should grow

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until the tops turn brown if you want them large. Pull the whole plant up when the tops are brown and fallen over, and leave them in the sun a few hours to dry off, then store away in a dark, cool, *dry* place.

Carrots are best eaten when young. Test them as you do radishes and beets, and pull the whole plant up. If they come up hard and break, use your garden fork to loosen the soil.

Cabbages are tested the same as lettuce only the heads grow much harder. When they are as hard as bullets either cut the plant at the root or twist it root and all until it comes out of the soil. If necessary loosen the soil with your garden fork. The outside or loose leaves are not used but can be fed to the chickens or put into your compost heap.

Muskmelons are always sweetest when allowed to ripen on the vine. Melons that we buy at the stores have generally come long distances by train and so are picked before they are ripe. You want to have all the sweetness the sun and warmth can give you, so test them this way: Raise the melon off the ground and gently bend at the stem. If the stem parts company with the melon easily, you will know it is ripe. You can also tell by the odor. Always cool melons before you eat them, or pick

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them in the very early morning when they are already cool from the night.



TWIST A CABBAGE AND IT WILL COME OUT OF THE GROUND, ROOT AND ALL

Parsley can be picked whenever you want it. Pick the large leaves and allow the small ones to grow. Parsley is always sending up new leaves

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from the center of the plant, so keep picking the outside ones to keep the plant growing evenly.

Peppers are used for cooking when green, and should be picked when they are large and just before they begin to turn red or yellow. Take the pepper in your hand and bend it upward. The stem will snap where it joins the plant.

Tomatoes should be picked when they are a good bright red or yellow. Do not leave them on the vine too long or they will split open on one side. Take the tomato in your hand, put your thumb nail on the stem and bend upward. The stem will break at the joint as easily as peppers. Do not try to pull the tomato from the vine because the stem will keep it fresher.

Turnips are tested for size the same as radishes, beets and carrots. They are much nicer and more delicate when young, say the size of a small peach. Pull the plant up root and all.

Potatoes remain in the ground until the leaves and stem turn brown, then dig the whole plant up with your garden fork. The potatoes are on the roots; break them off, and spread them in the shade to dry. Store away in a *dark, cool, dry* place.

Watermelons are a vegetable or fruit that is difficult to tell when ripe. Some people say the tiny

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tendrils by the stem of the melon is its signal; when the tendril dries up the melon is ripe. Other people test by pressing hard on the fruit. If you can hear a cracking sound the melon is ripe; still others tap it. If it sounds hollow they consider it ripe. Still others "plug" a melon, which means they cut out a small square piece and see if the center is red. But I think this a very bad way, because if the melon is not ripe, the hole lets in air and ants and the fruit is apt to be spoiled when ripe enough to eat.

Swiss Chard you will remember is a kind of beet whose leaves we eat instead of the root. When you are thinning your Swiss Chard pull up the whole plant, but when you are done thinning and the plants left in the row have grown tall and the midrib of the leaves firm and white, break off the outside leaves close to the root, either by cutting or bending the leaf backward toward the ground. This plant grows from the center like parsley; you can keep using the outside leaves all summer.

Okra should be gathered when the seed pods are young and tender. If they stay on the plant too long they get hard and woody. Always cut them; never try to break them for you are liable to break the whole plant.

CHAPTER XIX

HARDY VEGETABLES

THERE are several vegetables that live from year to year. These are asparagus, rhubarb, sea kale, udo, Jerusalem artichokes, chives, mint, sage, tarragon, horse radish, and one that lives over a year, or is good for part of two years—parsley.

Asparagus can be grown from seed or you can buy roots. One year old roots are as good as two year old. This plant wants plenty of humus in the bottom of the row where it is to grow. The part of the asparagus plant which we eat is the stem and leaf bud before it opens, cutting these stems as soon as they are a few inches above the ground; then the roots must send up more stems. We must not cut when the plant is too young so we allow it two years to grow strong and big before we commence cutting.

Let us say you are going to start some asparagus next spring, either sowing seed or setting out plants. It will grow all next summer, then in the fall when the leaves turn brown, cut off the tops and *burn*

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them to destroy eggs of the asparagus beetle. The following year do the same, but the third spring you can cut the stalks every day as they appear for six weeks—every year after that for eight weeks. You will have to watch for the asparagus beetle which attacks the stalks and eats them. Their babies, slug-like creatures, also eat the plants so they must be poisoned. Spray the plants the first two years with Arsenate of Lead— $\frac{1}{2}$ teaspoon to a quart of water. The third year, when you begin to cut the stalks to eat, allow one plant at each end of the row to grow up and keep it sprayed with the poison; we call these trap plants, for the insects will gather upon them and be killed by the poison. Large asparagus growers leave a trap row about every twenty-five feet, and these are kept covered with poison continually. We burn the stalks in the fall to try to prevent any beetles wintering over in the dead foliage.

Do not forget that asparagus requires humus. Either plant a legume, like soy beans, beside the asparagus to feed it, or cover the bed with humus in the fall and fork it under in the spring. I like soy beans for an asparagus care-taker better than anything else. Sow the soy beans when the ground becomes real warm. Cut the asparagus tops in the

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fall, but allow the soy beans to remain. The best variety of asparagus is Reading Giant.

Rhubarb can also be grown from seed or you can plant roots. It requires even more humus than asparagus. I would advise growing seedlings in a



CHOOSE THE LARGEST STALKS OF RHUBARB, PULLING OUTWARD AND DOWNWARD. THE STEM SHOULD COME FREE FROM THE ROOT WITH THE SHEATH ATTACHED

seed bed, transplanting them to a permanent position when several inches high. Dig a large hole and fill the bottom with humus before you set the seedling; this will give it food under the roots for many years to come. Three plants of Myatt's Linnæus Rhubarb will supply a small family; set the plants four feet apart, as they grow very large.

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Do not take any stalks from the plant the first year if you sow seed, but you may if you plant roots. You know it is the leaf stem of this plant which we eat. Always choose the largest stems on the plant, take one firmly in the hand near the ground, bend outward and pull. The stem should come free from the roots with the sheath attached. Do not allow the plant to blossom; cut all buds as fast as they appear, because we want all the strength to go to the root, so it will keep sending up more stalks.

Sea Kale is a plant very little known, but it is such an early spring vegetable, you should know it. Sow the seeds sparingly; thin the seedlings to four inches, and let them grow all one summer. In the fall transplant to a new place, setting them 2 feet apart; when the frost comes, cover with litter or leaves. Early the next spring you will see them poking up their heads. I have seen them lift clumps of frozen earth. Now we must remove the litter and crown them up—cover the shoots with earth and as they push through, cover repeatedly until you have a mound about a foot high, then dig in and cut the shoots off near the root. It is the leaf stalk, nicely blanched, which we eat. You can let them grow up and cut several times, then uncover and allow the

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plants to grow all summer. Every year follow the same practice. This vegetable is ready to eat earlier than any other that I know of. Cook it the same as asparagus.



SEA KALE IS THE FIRST VEGETABLE TO APPEAR IN THE SPRING

Udo is a new friend from Japan; it is sometimes called Japanese Celery. We eat the leaf stalks, too, but at an entirely different season—Christmas. Buy the roots and set them five feet apart. They grow into beautiful tall bushes, with heavy stems, and white blossoms. In the fall when killed by frost, cut the stalks off at the ground, then pile a foot of earth over them, and on top of the earth a foot more of leaves or straw or litter. At Christmas

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time remove the litter and you will find the new shoots coming through the earth. Remove the earth



A FIVE-YEAR-OLD UDO PLANT. THE WHITE BLOSSOMS ARE MUCH LOVED BY BEES

(which the litter has kept from freezing) and cut the stalks just as you would Sea Kale. Replace earth and litter and in a few weeks more stalks will

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be ready to cut. If you do not care to go to this trouble, cut the shoots in the early spring, banking the plants the same as Sea Kale. The flavor of Udo is very Oriental—somewhat piney, but it is very delicious. We eat it raw, just plain or as a salad, or cooked like asparagus. The stalks should be peeled before using.

Jerusalem Artichokes are nothing new to some of my Western and Southern friends, but they are little known in the East. The plant is a sunflower, but its roots are like small knobby potatoes. We plant these roots in the spring, and allow them to grow all summer. When frost kills the stalks they should be cut down. You may then dig the roots or leave them until early spring. Save enough roots to plant again and use the rest for cooking and eating. One root planted in the spring will have increased to many when you dig it in the fall.

Chives are an onion grass, the grasslike leaves of which are used for flavoring. The plant increases in size from year to year, and you can cut the root into pieces and so increase your number of plants. You can sow seeds of chives or buy plants. One or two is plenty for a family unless they are very fond of it.

Mint is considered an herb. It grows wild in

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many places, but is extremely nice to have in the garden. It multiplies year after year, because the roots send out runners under ground which in turn send up new plants every few inches. The leaves and stems are used for flavoring.

Sage is another herb; the leaves are used for flavoring. The plant is a small bush and lives for many years.

Tarragon leaves are used for flavoring salads and vinegars and are much sought after by salad lovers. The plants live from year to year and increase in size. You can grow it from seed but I should advise buying one or two plants.

Horseradish is a well known "condiment." The roots are grated fine and mixed with vinegar. The plant is a large coarse-leaved fellow, and when we dig the roots in the fall we save a small piece and set it back in the same place to make a new plant for next year. "Maliner Kren" is the best horseradish I know.

Parsley lives over a year and if covered with leaves and straw can be gathered nearly all winter. The next spring it is also good to use, but toward mid-summer it begins to blossom, then the leaves become small and bitter and are not good to use. Plant a little parsley seed each year, and keep it

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coming along fresh all the time, for when the new plants are large enough to have their leaves gathered, the old will be ready to pull out. If you did not save the old plants over the winter there would be many weeks when you could not gather parsley at all.

All hardy vegetables do much better if they have a dressing of well rotted manure or soil from the compost heap spread upon them each fall. It keeps the soil from blowing away from the roots, adds humus to the soil for the plants to feed upon and prevents the freezing and thawing, which occurs in many sections, from lifting the roots out of the soil. Compost should be put on just as soon as the ground is frozen or before it freezes. This will keep the frost in or hold it out so the lifting process cannot take place.

There are two annual vegetables that you ought to know; they are extremely good and are not difficult to raise.

One is Chinese Cabbage, and the other a Japanese Radish.

The Chinese Cabbage's real name is Pe-tsai. Americans have named it celery cabbage, which is a very poor name indeed because it has neither the shape nor the flavor of celery but is a tall, pointed,

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CHINESE CABBAGE, "PE-TSAL," FORMS A LARGE HEAD OF DELICATE, CRINKLED LEAVES

loose head of very crinkly leaves. It has a very mild cabbage flavor and the heart is like a head of well-grown lettuce.

The seed should be sown at the same time you

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sow the seed of the late cabbage. You can put the seed into the row where you wish the plants to remain and thin them when two inches high, or you can transplant the seedlings just as you do ordinary cabbage. The plants should be 18 inches apart and should be kept well cultivated because we eat the leaves and we want them to grow rapidly and be tender. I have had many heads weighing eight and ten pounds, so you see it needs room.

Cabbage worms love Pe-tsai as well as ordinary cabbage, so spray well with arsenate of lead to poison them. Are you wondering whether the arsenate of lead will poison you as well as the worms? It might make you a little sick if you ate some leaves with poison on them but you are not going to do that. You see cabbage grows from the center and the outside leaves expand as the inside leaves grow, but the inside leaves are folded so closely about each other no poison could get into them. When you cut a cabbage always wash it carefully, then peel off the outside leaves where the poison spray has been and you will have a perfectly good clean heart.

Pe-tsai makes the best cold slaw or cabbage salad I know of, and it is also very good when cooked.

The best Japanese Radish to raise is the "Sak-

HARDY VEGETABLES

ura-jima." The seed should not be sown until June, because this is a late fellow which will keep all winter. How large do you think he will grow? As a rule, 18 pounds, though I have seen many weighing 30 and 40 pounds, and in Japan they have raised some weighing 70 pounds. No one would dream that a huge radish like this could be good—but indeed it is very good, so good I have seen children beg for a Sakurajima sandwich instead of cake!

It takes much longer for these radishes to grow than our little ones, of course, so if the seed is sown in June they will be ready to eat in September. Sow the seed very thinly in the row. Thin the seedlings first to 6 inches; then, when they have grown so large they touch, take out every other one. The plants will then be 12 inches apart. Cultivate often and keep wood ashes and tobacco worked into the ground around the plants to keep maggots away. The maggots are tiny white grubs that are very fond of eating the radish.

When you pull your radish up cut off the leaves and cook the white stem just as you would asparagus. Then you can cut some thin slices of the radish to eat raw and cook some of it just as you

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would cook turnips to be served with a cream sauce. Any radish that is left can be hung up in a cool dark cellar until you are ready to use some more. Isn't this a vegetable worth knowing about?

CHAPTER XX

LEGUMES

You will remember I told you something about plants that take nitrogen out of the air and store it in their roots. I promised then to tell you more about them later. They are called "Legumes."

Have you heard how plants use potash, phosphoric acid and nitrogen, and how the most difficult to obtain is nitrogen? The plants that gather nitrogen from the air give it to us for just what the seed cost, which surely is not very much. We know that there is a great store of potash and phosphoric acid already in the soil but it is locked up so the plants cannot use it. We had a long talk about the gases which decaying matter (called humus) gives off, and how these gases unlock the stores of potash and phosphoric acid so the plants can use them. So nitrogen is the thing we need most next to humus.

There are many plants which store nitrogen in their roots: all clover, all beans, all peas, vetch, and alfalfa. I hope you will not forget to save all the pea and bean vines and bushes from your garden

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for your compost heap. A good method is to cut these plants off close to the soil, leaving the roots in the ground to decay and give back the nitrogen they have stored.



TURNING THE COMPOST TO HELP IT DECAY AND BECOME HUMUS FOR
NEXT YEAR'S GARDEN

But these plants occupied only a very small space in your garden and so the nitrogen will be only in these certain places. I can hear you asking at once:

“How can I get this nitrogen all over my garden?”

LEGUMES

You must plant legumes especially for it if you possibly can; some of them live all winter in nearly every section of our country. We plant this seed toward the end of summer, and leave it all winter, forking the plant under next spring when we are ready to prepare our garden for next summer's work.

I can see that you are worried about the appearance of your garden with these extra plants in it. Let us take our sample gardens, both vegetable and flower, and see what we can do.

In August we can give the garden a good thorough cultivation, taking out all weeds; then scattered seeds of crimson clover, or vetch, or alfalfa among the plants wherever there is a bit of space. Pat them into the soil well and they will commence to grow before the frost kills the vegetables and flowers. When the plants die cut off all stalks and you will find your garden has a warm green overcoat for winter and the new plants are gathering nitrogen from the air for your next year's crop.

Perhaps the ground is shady in some places and you are afraid the seeds of the legume will not germinate. Do not fear. They may stay asleep a little longer than those which fall in sunny spots, but they will wake up after a while and grow.

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In the South you can use soy beans or cow peas, or velvet beans for your legumes because there is no frost to kill them, but my Northern friends will have to use crimson clover or vetch or alfalfa.

This winter overcoat will do something more than store nitrogen for us, and something almost as important. It will hold the soil from washing and blowing. Did you know that one inch of soil is blown away in a winter if it is left bare and there is no snow blanket? One inch of humus and soil is a good deal to lose.

When spring comes and you turn the legume under, you will have a fine mat of leaves and roots which will fill your ground with humus. This is called "green manure" and is one of the best forms of humus any gardener can use. Suppose for some reason you are not able to plant your garden next spring, then the legume will go on growing and your garden will be a beauty spot instead of an eye sore. Crimson clover has an exquisite long crimson blossom and a patch of it in bloom looks like velvet. Vetch is a vine with beautiful foliage and purple blossoms which looks like tiny wisteria blooms. Alfalfa's blossoms are also purple, very small and delicate, but a patch of alfalfa is a thing of beauty for the green alone.

LEGUMES

As far back as the written history of gardening and farming goes, which is 700 years before the birth of Christ, good farmers always plowed down a crop of clover every two or three years. They may not have known that it stored nitrogen in its roots, but they did know it made their land richer and that they grew better crops for it. If clover crops have been good for land for nearly 2,700 years they surely will continue to be good for it, and we should try to put them into our gardens no matter how much trouble it may be.

CHAPTER XXI

PLANT SUPPORTS

It is now time for us to be thinking of the training and supporting of some of our plants.

Garden peas and sweet peas both need something to climb on for they are vines. As a rule brush (which in this case means branches of trees or bushes) is stuck into the ground along the row of plants. If you can get these branches from willow or hazel or alder, they are excellent. If you cannot get any, a piece of chicken fence wire or an old fish net will do. For these two latter, stakes should be driven into the ground at each end of the row, if the row is short, or at intervals if the row is long. There will not be a great deal of weight on the fence so your stakes need not be very heavy. Stretch the wire or net and fasten to the stakes; the vine's tendrils will soon feel it, and begin to climb. If your vines should be leaning away from this support, lay them over and draw a little earth against the roots so they will remain in the position you want them.



SWEET PEAS GROWING ON WIRE FENCING

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Peas grow so differently in different sections of our country that you must get some idea of how high to make the support. Garden peas rarely grow over four feet, but sweet peas grow to a height of seven feet in some sections of the country. No doubt you can find out from some gardener how high they generally grow in your vicinity, then you can arrange your support accordingly.

I suggested in "How to Choose Seeds" that you plant bush Lima Beans so you would not have to supply a support for the climbers, but you may prefer the climbing varieties, in which case these are good ways to train them. You have all heard of "Bean Poles" (possibly you have been called one). They are the usual support for Limas; three poles are stuck into the ground around the bean hill, brought together at the top and tied. You see these beans are planted in hills, not drills, 5 seeds to a hill and the three strongest allowed to remain. The vines climb by twining about the pole as morning glories do. Limas may also be grown on the wire or net support the same as peas; when they reach the top of the wire you may cut them off. This will force the plant to make blossoms nearer the ground (which is not at all a bad idea.) You can make an arbor for the lima beans if you can secure



LIMA BEANS COVERING AN ARBOR IN A MOST ARTISTIC FASHION

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good poles or young cedar trees. It will be necessary to have two or more rows of beans for this method. Put one pole into the ground at each hill, then place a smaller, lighter pole across the tops, either straight or diagonally. The diagonal method is much stronger and if your garden is sufficiently large to admit of one of these arbors you can leave it for several years, changing the crop upon it each year, using such vines as lima beans, cucumbers, muskmelons, gourds and, for an ornamental change, morning glories. The cross bars on the top of the arbor should be wired or tied securely.

You see the melons and cucumbers are really vines; we allow them to grow on the ground to save the expense of supports, and they grow very well, but if they are trained up they are easier to spray and usually produce better fruit. If your garden is very small, and you wish these vine fruits and vegetables, you can train them on poles, making the three-pole tent support or the arbor support.

Tomatoes do not need a tall support as they are short vines, especially the dwarf varieties (like Dwarf-Stone), so a good strong stick about three feet long stuck firmly in the ground near the plant is sufficient. If you wish you can buy round wire supports, which are circles of wire with three wire

PLANT SUPPORTS

legs. Slip the circle over the plant and press the legs into the ground. The tomato plant grows up in the middle and just hangs over the rim of the circle, but we have to tie the vine to a stake.

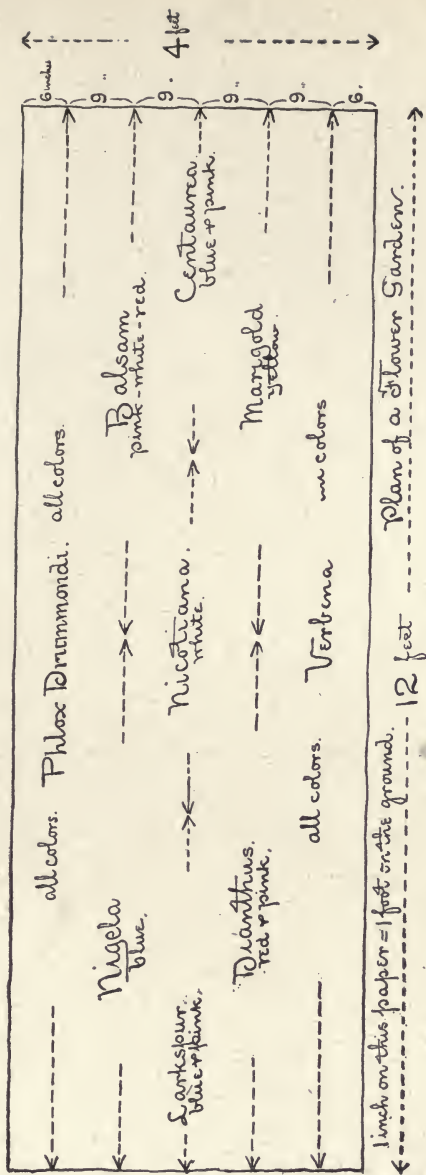
The best material to tie annual vines with is raffia, a tough grass from Madagascar; next best is soft string. Never tie a vine tight, allow room enough for the stem to grow and expand—no doubt you have seen trees where wire was wrapped around them to hold a fence or a telegraph pole. The wire cut into the trunk of the tree. It is to the tree just the same as a tight ring on the finger or tight bracelet on the arm; it cuts off the circulation.

CHAPTER XXII

ANNUAL FLOWERS

Do not sow your flower seeds until the earth feels a little warm; in the north, when the leaves on the trees are well out. Let's plan a flower garden 12 feet long and 4 feet wide and we can of course reach it from both sides; so we will have one row through the middle (running the long way) for tall flowers; one row each side of it for medium flowers; and a border of small flowers on each edge. We will divide the middle row into three parts so we can have three varieties of tall beauties. Let us plant the middle row with *Nicotiana*; toward one end, *Centaurea*; toward the other, *Larkspur*. That will give us white flowers in the middle, with pink and blue on each side. For our mediums let us have *Dianthus* on one side and next to it *Marigolds*, while opposite them we will choose *Balsam* and *Nigella*. For one border let's choose *Verbenas* and the other *Phlox Drummondii*.

Lay your hoe or rake handle on the bed in the middle running the long way with the tool end



SKETCH X

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lying up in the path (measure from each edge to be sure it is the middle). Now press the handle just as you pressed the pencil when you made gutters in the seed box; take the hoe up and reverse it, laying



MAKING GUTTERS WITH A RAKE HANDLE JUST AS WE MADE THEM
WITH A PENCIL IN OUR SEED BOX

the tool end up at the other end of the bed, again exactly in the middle, and press. You now have a straight gutter the full length of the bed for the center flowers. Divide this into three parts, making a little mark on the soil just as we made it on our paper plan. Next take your three packets of seed

ANNUAL FLOWERS

and lay them by the gutter where they are to be planted.

Do you know how to open a packet of seed? Hold it up and tap it so all the seed runs down into one end, then with the scissors cut off a small piece all across the other end; now carefully press the sides and the packet will open like a pouch. Hold it over the gutter where you are to plant the seed and gently tap, tap, tap with the first finger until the seeds begin to drop. Then move it along the gutter while you keep tapping until you have that gutter dotted with seed. Do not sow the seeds too close together for your plants will need room.

We have planted the Larkspur, now we will do the same with the *Nicotiana* and *Centaurea*. When those are sown, push some earth over them gently or better still sprinkle some over them. To do this take some earth in your hands, hold it above the seeds and rub it between your palms, then pat the whole row with your palm to make sure the seeds are tucked in. Put a stick at each end to show where this row is. If you are afraid you will forget the name of the seed you have planted you can put a little stick by each kind of seed with its name upon it well up above the ground level.

We now have two feet each side of our center row

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in which to make the other two gutters; we must not plant our border flowers exactly on the edge, as they will interfere with the path, so we cannot divide this space in half but must allow six inches from the edge of the bed for our border row, which brings our side row 9 inches from the center of the bed.

Make all your gutters the same as you made the center one. Open your packets and sow your seeds just as I have described, remembering that small seeds must not be planted deep and large seeds not too close together. Be sure and "tuck" them in and mark the ends of the rows.

Do you know why we made our line so straight and were so careful to sow the seeds in them? Two reasons: If we did not have them in a definite place how would we be able to tell them from the weeds when they first came up? Unless you know your seedlings when they first appear you might pull them all out thinking they were weeds, but if they are in a straight line, many looking alike, then you know your babies. Also we wish our gardens to have a neat appearance; again it is so much easier to cultivate if the rows are straight; this is much more true of vegetable gardens than flower gardens, but applies to both except a garden of "perennial" flowers which I will tell you about later.

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If you intend having a border along the house or fence or any such place you must choose your seed so the plants will look well. The tall ones should be at the back of the bed, next to the house or the fence,



THIS GARDENER IS MAKING A MISTAKE. HE SHOULD SOW THE CENTER ROW FIRST. ALSO THE TEETH OF THE RAKE ARE UP—THEY ARE DANGEROUS

and the short ones at the front. Then, too, it is wise to know a little about the colors so you won't have next door neighbors that fight—such as an orange colored flower next to a magenta.

We will begin with tall flowers and talk about how they grow, their colors, and height. I would

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like you to have a 12 inch rule by you now so you can stand it up and see just how tall the flowers grow. There are three distinct kinds of flowers: "Annuals," which bloom the first year and then die; "Biennials," which grow all one summer, live over winter and bloom the second summer, then die, and "Perennials," which live many years and bloom every year. We are going to talk about annuals now; later we will talk about the others.

Asters grow 12 inches high, the plants are bushy, and need about 10 inches of space in which to grow. The colors are white, pink, red, lavender, and dark purple. They bloom in late summer and fall.

Balsam, sometimes called "Ladies' Slipper," grows 14 inches and taller, the stems of the plant are almost transparent and the blossoms very pretty and delicate. They come in white, pink, purple, rose and spotted, and bloom in summer.

Calendula grows 12 inches high and more, with yellow and orange blossoms, blooming in summer.

Calliopsis is a very tall, feathery plant, growing sometimes two feet. The flowers are single, pure yellow, or deep bronze, or both colors mixed. They bloom in summer.

Celosia is also called "Cock's Comb" but many varieties look like plumes. They grow both tall

ANNUAL FLOWERS

and short, the tall ones 18 inches high, and make thick bushes with the blossom in the tips of the branches. They come in all shades of yellow and red and bloom late in the summer.

Centaurea is also called "Corn Flower" or "Bachelor's Button." This flower grows as tall as *Calliopsis* (2 feet) and is also feathery in habit. In fact these two are excellent to grow together, for they come in pink, and blue and white. They bloom in summer.

Cosmos is one of the tallest of all, growing sometimes four feet high, making large bushes with feathery leaves. The blossoms are white, light pink and red, and they bloom in the fall.

Dahlias grown from seed sown indoors will begin to bloom about August and right along to frost. They grow as tall as *cosmos*, and have all shades of flowers, except blue, from white to dark red.

Gaillardia is another tall fellow and bears red, yellow and orange flowers which bloom all summer.

Larkspur is one of the prettiest tall blue flowers we have, though it also comes in pink and white; it grows tall and straight like a church spire, about 18 inches high and blooms in summer.

Salvia is sometimes called scarlet sage and is a

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very brilliant flower, blooming in late summer and fall. It grows about two feet tall.

Marigold is a puff ball flower of the brightest yellow and orange. You can have either tall or dwarf ones and they bloom all summer.

Nicotiana is one of the dearest flowers we have for it sends its delicious perfume out at sunset to soothe all the other flowers as they doze off to sleep. It grows two feet tall with large white trumpets which the evening insects love. It blooms all summer until frost.

Scabiosa grows about 18 inches tall, a slender plant which does not take up much room. The blossoms have very long stems and come in the richest shades of red, looking like velvet, also in white and pink. They bloom in late summer.

Sunflowers are so big it seems almost as though we should put them by themselves. They sometimes grow ten feet high and have blossoms 20 inches across. There are some smaller varieties but they are all too large to put among the more delicate flowers. They come single and double and are a bright yellow in color, blooming in summer.

Zinnias are to me the homeliest flower we have; they are very stiff, look as though they were made out of paper and seldom come in pretty colors, but

ANNUAL FLOWERS

I know people who are very fond of them. They grow about 18 inches tall; their colors are bright yellows, orange and red, and they bloom in summer.

Now for the shorter fellows:

Candytuft is a fairly early bloomer, grows about 8 inches high and has white and violet blossoms.

Dianthus our grandmothers called "Garden Pinks" and were a favorite flower; they have the perfume of carnations. The leaves are very narrow and a silvery green, the bushes spread out a good deal and grow only six inches tall. The blossoms come single and double and are white, pink, red, and striped. They bloom in mid-summer.

Mignonette is as sweet in day time as *Nicotiana* is at night; the flowers are not so beautiful but we love it just the same. It grows about six inches tall and will bloom all summer if you keep the blossoms picked as they begin to fade.

Petunias have trumpet shaped, sticky, velvety flowers and the plants do not grow tall, but spread out in a bushy form. It blooms in late summer and the colors are white, purple and red.

Nigella is called "Love-in-a-mist" because the blue and white flowers are surrounded by a tiny green net work. It is extremely pretty and grows

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about 7 inches high, blooming in early summer.

Poppies are flower angels, opening in the morning with the coming of the day and going to flower heaven at night. They are so dainty, so varied, so many colored, we cannot help loving them. The "Shirley" poppies grow 8 inches tall, but the double "bush" poppies grow to a foot or more. They bloom in mid-summer.

Eschscholtzia (pronounced Es-kol-zia) is very dwarf with feathery foliage and brilliant yellow, orange or red flowers. They bloom in mid-summer.

Nasturtiums grow about 8 inches high and form a big round bushy plant with many flowers in shades of yellow, orange, red and brown; some have very light green foliage, others very dark, still others variegated. These are called "Tom Thumb" or dwarf nasturtiums; there is also a climbing or trailing variety which is a vine, and cannot be planted in our garden unless we have something for them to climb up on or a wall for them to trail over. Nasturtiums bloom from midsummer to frost.

Phlox Drummondii (pronounced Flox) is a dear little plant for it has so many flowers for its size. It grows only about five inches high, but has clusters of round blossoms in almost every shade; usual-

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ly each tiny blossom has a spot or ring of different color at the center or "eye" as it is called. Some of the varieties are star shaped, others fringed. They bloom all summer.

Pansies are beloved by every one; they grow about six inches high and have such charming faces and combine so many colors, it is hard to describe them—but who needs to have pansies described! They love the cool weather of early spring and fall and do not bloom well during the summer unless they have some shade and are well watered.

Sweet Alyssum is a true border plant as it grows only about three inches high and is just smothered in tiny fragrant, white blossoms. It blooms when it is barely out of the ground, and continues a long time. When the seeds ripen they drop and soon you have new plants blooming where the old ones were.

Forget-me-not is a dear blue flower and blue flowers are rather scarce. It grows about five inches high. I never yet have seen a child who did not love forget-me-nots. They always bloom in the spring, and like the pansy prefer cool shaded places.

Verbenas are the shortest of all for they lie flat on the ground, just sending up the blossom stalk, and spread out so far they will cover three feet of

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garden. The flowers are something like phlox, only the clusters are flatter. They come in every shade of pink and purple, white and cream color; many of them have a white "eye." If you keep the blossoms picked as they fade the plant will bloom all summer until frost.



FORGET-ME-NOTS ARE GENEROUS WITH THEIR BLOSSOMS

Now we come to climbers or vines.

Sweet Peas are one of the most beautiful, but they want deep, rich, moist soil full of humus. If you love them very much and are not afraid of hard work, have some. They must be planted early in the spring, given brush or fence or fish net to climb upon, must have the ground around the roots shaded

ANNUAL FLOWERS

in hot weather by straw or grass cuttings and the blossoms must be kept cut, for this plant will stop blossoming as soon as it has made a few seeds. My Northern friends can raise sweet peas much more easily than my Southern friends.

Morning Glories will grow 'most anywhere and are so very beautiful, blooming as the poppies do, only for a day. They climb by twisting their stem about the support; the flowers come in white, pink, purple, and spotted. I have even had silver gray blossoms. They bloom from mid-summer until frost and will climb 10 feet.

Cypress Vine twines itself just as does a morning glory but the foliage is very feathery while the red and white blossoms are trumpet shaped. The vines climb about 8 feet and bloom from mid-summer until frost.

Canary-bird Vine is as true to its name as a flower could be for the yellow blossoms look like tiny birds perched on the vine. The vines grow about 8 feet and bloom from mid-summer until frost.

Balloon Vine grows very rapidly and covers about 15 feet. The blossoms are small but are followed by dear little green balloons, which hold the seeds. They are pretty all summer.

Wild Cucumber Vine will cover 20 feet, has a

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feathery white blossom and queer prickly seed pods and tendrils to climb by. They are prettiest through the middle of the summer.

I wonder if you are perfectly breathless after reading all this, and are saying to yourself, "This is as bad as any catalog." But I have given you only 14 tall flowers, 14 short flowers, and 6 vines to choose from though you have 18 vegetables on the list.

Now this is the way to choose: Decide how many tall varieties you wish, how many medium and how many short. Now pick out the tall ones that you like best, writing down the names, color, and height; then do the same with the medium and the short. For instance, your bed is to be ten feet long and six feet wide, and you can reach it from both sides, of course. Then you can have one row of tall plants in the middle, one row of medium each side of it, and one row of short on each edge, so that makes

1 row tall

2 rows medium

2 rows short.

After you have made your list you can easily tell whether your plants go together well, or if their colors are going to clash.

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Here is a sample:

Nicotiana	white	2 feet
Calliopsis	yellow	2 feet
Centaurea	blue and pink	2 feet
Balsam	pink and white	14 inches
Larkspur	blue and white	18 inches
Dianthus	red and white	6 inches
Mignonette	green and yellow	6 inches
Nigella	blue and white	7 inches
Candytuft	white and violet	8 inches
Poppies	white, pink and red	8 inches
Pansies	all colors	3 inches
Sweet Alyssum	white	3 inches
Verbenas	white, pink and violet	3 inches
Forget-me-nots	blue	5 inches

That is too many flowers for one small gardener to choose, so you begin to cut out the ones you care least for, always remembering *there will be another summer* when you can have an entirely different assortment. I would advise you to choose three tall varieties, six medium varieties, and 2 short varieties if your garden can be reached from both sides. If it is very long and narrow, then have six tall, six medium and four short.

Flowers must be thinned as well as vegetables because we want strong plants which we cannot have if they are too crowded, any more than we can have strong children if they do not have room enough in which to grow and play.

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I think I will give you a table for thinning flowers, then you only have to glance at the ones you planted to show what distance apart they should stand.

Name	When to thin	How far apart
Asters	when 1½ in. high	thin to 4 in.
Balsam	when 1½ in. high	thin to 5 in.
Calendula	when 2 in. high	thin to 4 in.
Calliopsis	when 2 in. high	thin to 3 in.
Celosia	when 2 in. high	thin to 6 in.
Centaurea	when 1½ in. high	thin to 3 in.
Cosmos	when 2 in. high	thin to 6 in.
Gaillardia	when 2 in. high	thin to 5 in.
Larkspur	when 1½ in. high	thin to 4 in.
Salvia	when 1½ in. high	thin to 5 in.
Marigold	when 2 in. high	thin to 6 in.
Nicotiana	when 2 in. high	thin to 6 in.
Scabiosa	when 1½ in. high	thin to 3 in.
Zinnias	when 2 in. high	thin to 5 in.
Candytuft	when 1½ in. high	thin to 4 in.
Dianthus	when 1½ in. high	thin to 4 in.
Mignonette	when 1½ in. high	thin to 3 in.
Petunia	when 2 in. high	thin to 4 in.
Nigella	when 1½ in. high	thin to 4 in.
Phlox	when 1½ in. high	thin to 3 in.
Pansies	when 1 in. high	thin to 4 in.
Sweet Alyssum	when ½ in. high	thin to 2 in.
Forget-me-nots	when 1 in. high	thin to 3 in.
Verbenas	when 1½ in. high	thin to 4 in.
Poppies and Eschscholtzias	Sow seeds very thinly and do not pull any plants out	

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Nasturtiums	Sow seeds 2 in. apart, and pull out every other plant if they all come up
Dahlias	Set the plants out 12 in. apart
Sunflowers	For small varieties plant 2 seeds every 8 in.; large varieties every 14 in.; thin to the best plant in each hill when 3 in. high

If you set out pansy plants have them five inches apart. Sweet peas: Sow seeds two inches apart and do not thin them. Seeds of vines should be sown three seeds near each other where they are to climb, then thin when two inches high, leaving the strongest.

CHAPTER XXIII

SUMMER BULBS AND PLANTS

I AM going to tell you of bulbs and plants you can buy and plant in the late spring, for I have a feeling that some of my friends may have started their gardens late and are a wee bit discouraged.

Each one of these flowers we are going to talk about grows into larger plants each year; they do not die in the fall but go to sleep and come up next spring stronger than ever.

These bulbs and plants cost from 5 cents to 15 cents each, so you have to choose according to your bank account. But remember they are not for one year alone, and a few of these will take up quite a lot of room.

Many flowers have a bulb from which the plant grows, and we plant these instead of seed. Some of them (called the "Dutch Bulbs" because they are nearly all grown in Holland) must be planted in the fall as they make their roots while the weather is cold. These bulbs are crocus, snow drop, tulip, hyacinths, etc.

SUMMER BULBS AND PLANTS

We have some bulbs and roots, however, which we can plant in the spring. These are Dahlias, Gladiolus, Montbretias, Tigridias, Caladium (Elephant's Ear), Calla Lilies, Hyacinthus Candicans, Tuberoses, Cannas, Tuberous rooted Begonias, Hemerocallis, Liliiums, Tritoma, Funkia, Spider Lily, Phlox, Chrysanthemums, Platycodon and Hardy Asters.



FLOWER BULBS WE CAN PLANT IN THE SPRING. STARTING AT THE LEFT, THEY ARE GLADIOLUS, DAHLIA, TIGRIDIA AND LILY

Now I will tell you what each one is like and how to plant it for you may want some in your gardens.

Dahlias have a bulb much like a sweet potato; they need to be planted about 8 inches deep and laid on their side. The leaves are large, the stem of the plant thick, and the blossoms come in the late summer and continue until frost. They like cool nights and plenty of moisture. The flowers are so many shaped and so many colored they are really bewildering. The *cactus* dahlias have rolled, pointed

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petals, the *show dahlias* have huge blossoms, with rather flat petals. The *pompon dahlias* are small with tightly curled petals as even as though made by machinery; the *single dahlias* have one row of petals like a large daisy, and the *collarette dahlias* are single with a row of tiny, tiny petals of a different color, usually white at the base of the large petals. Take the roots up when frost comes and store in a cool, dry place until next spring.

Gladioli have a bulb like a dried onion, a broad blade-like foliage comes out of the center of each bulb and the blossom stalk from the center of the leaves. The blossoms are somewhat trumpet-shaped and nearly always look as though they were made of velvet. Usually there is a blotch of a contrasting color in the throat of the blossom which gives it great charm. They come in all shades from white to black-purple and black-red and their name is legion. The bulbs should be planted six inches deep, with the point up, when the ground is warm. These bulbs must be taken up every fall when frost comes and kept from freezing until spring.

Montbretias are bright fellows, coming mostly in yellows, oranges, and warm browns. They bloom for a long time. It would be nice to add a new

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bulb to your cluster each year until you had a mass of them.

Tigridias are planted much like Gladioli but need a little more room; they always seem to me well named, because they look like little spotted tigers



GLADIOLI MUST BE TAKEN UP WHEN FROST COMES AND STORED IN A COOL DRY PLACE UNTIL SPRING. THIS PICTURE SHOWS A MOTHER BULB AND HER BABIES

and come in the orange-brown colors, also reds and white.

Caladium is a big fellow—both his fleshy root and huge leaves which are the shape of an elephant's ear. They should be planted pretty deep when the soil is warm and they need a *great deal of water*. Of course anything as big as these plants need lots of room. They have no blossom, therefore are

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grown only for their curious leaves. These roots are tender and must be taken up when frost comes.

Calla Lilies love lots of warm weather, and much water. People living in the South can have them in their gardens, but my Northern friends must plant them in pots. Make holes in the garden and sink the pot in the holes, just before frost take them up, pot and all, and put them in a sunny window in the house where they will bloom. But in the South they will bloom out of doors. I remember years ago seeing the street cleaning department of the City of Mexico digging calla lilies out of the ditches. They were such a large, strong weed they choked the gutters.

Hyacinthus Candicans is a wonderful flower! The bulbs should be planted pretty deep—six inches at least; the broad leaf comes up in spring and along about August (here where I live) a tall flower spike is sent up—then the wonderful white bell-shaped flowers begin to open and keep up a procession of bloom for a long time. My children call them “Giant Lilies of the Valley.”

Tuberoses: Probably no flower has a stronger perfume than these and it is a perfume many people are very fond of. The flowers are a creamy white, thick and wax-like, growing on a stiff,

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straight stalk. The foliage is rather grass-like and is not very noticeable. Plant the bulbs about 4 inches deep.

Cannas are tall, straight, stiff fellows; grown as much for their broad, handsome leaves as for their bright blossoms. There are dwarf varieties now, which would be wise for you to grow unless you wish a very tall plant in some part of your garden. These plants are like the Elephant's Ear—they like much moisture and much humus. Plant the roots 6 inches deep. Take the bulbs up when frost comes and store them away in a cool place.

Tuberous Rooted Begonias are one of the loveliest flowers for a shady garden, for they do not mind if they have practically no sunshine. The little bulbs are queer, hairy things with a hole in the upper side. They look like little brown bowls. The bowl side must always be up for the leaves come out from around its edge. If the weather is not yet warm and danger of frost not over, plant the bulbs in a box and place them in a warm window, covering them only half way up, which is really not much more than laying them on the soil. We have started them by laying the bulbs on a box of moist sawdust, also on a box of moist moss. The leaves start before the roots do, so there is but little dan-

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ger of hurting them when they are moved. The foliage is beautiful; the flowers, exquisite. They come in white, pink, yellow, orange, scarlet, and rich red. Also single and double. The plant never grows tall, not over eight inches, so plant them near



TWO PLANTS FOR SPRING SETTING. CHRYSANTHEMUM AT THE RIGHT;
HEMEROCALLIS AT THE LEFT. THE EARTH MARK ON THE STEM
SHOWS HOW DEEP THEY SHOULD BE PLANTED

the edge of your garden. Take the bulbs up when frost comes and store them in a warm dry place.

Hemerocallis is the name given to the many hardy lilies which have large roots instead of bulbs. One of the loveliest of these is the "Lemon Day Lily" which is pure lemon yellow and very fragrant. The leaves of all the hemerocallis come up

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very early in the spring, which always makes one stop and say, "How do you do, dear lilies. Now I know spring is here." The plants increase very rapidly, so you will have a large clump in a few years.

Liliums are one of the choicest, most stately and dearly beloved of all garden flowers. You surely all know the "Easter Lily," that it is "*Lilium Longiflorum*," and does the best in the greenhouse. But "*Lilium Candidum*," better known as the "Madonna Lily," does very well in gardens. It is nearly the same as the "Easter Lily." You can have the lili-ums in white, white with crimson blotches, white with a gold band on the petals, orange, red, and scarlet. One of my favorites is the Tiger Lily, bright red with dark brown spots; it is so quaint and old-fashioned. Plant the bulbs deep, especially the Japanese varieties.

Tritoma is called the "Red Hot Poker Plant" because its flowers are such a fiery orange, though you can get them in tamer colors. The leaves are stiff and spiked and the flowers are borne on stiff stems. Each bell-shaped flower droops downward with dozens and dozens of blossoms on each spike. We buy a plant of this flower, and set it in the garden just as deep as it was before; you can tell by

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the color of the stem; where it is light green it was covered with earth.

Funkia is called the day lily because each individual blossom lasts only a short time, but as there are many flowers on a stalk opening one after another, the plant remains in blossom a long time. The white day lily has broad ribbed leaves, blossom stalks come up in August and the perfume of the flower is delicious. There are also purple blossomed varieties and varieties with variegated leaves. Set the plant as deep as it was before it came to you. It will increase in size every year.

Spider Lily is a queer little fellow for the blossoms are in a tangle just like a spider's web. It is an old-fashioned favorite, very quaint and pretty. Plant the bulbs about 4 inches deep.

Phlox can really be grown from seed but you will not get flowers the first year from them. I am now speaking of the hardy phlox, not *Phlox Drummondii*, which we used in our garden plan. These phloxes live from year to year. They bloom from August until frost; that is the reason we plant them in the spring. They grow as tall as two feet and come in all shades and colors except blue. They are also one of the best beloved flowers.

Platycodon is called Chinese Bell flower for the



OLD-FASHIONED "TIGER" LILIES—TALL, STATELY AND DEARLY LOVED

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blossoms are surely bell-like, though the bud is the quaintest balloon you ever saw. They come in a soft blue and white. The leaves are not handsome, but the blossoms borne on tall stems make up for that. We buy plants of these too, and the clusters increase each year.

Hardy Asters should also be planted in the spring for they bloom in September and October. Some of them are very tall, like *Aster Tartaricus*, with a great thick stem and huge clusters of tiny purple asters like the wild asters we find in the fields. Some are quite short with feathery foliage and blossoms. *Boltonia Asteroides* (I wish we had simpler names for these flowers) is a great favorite for its white blossoms in August are like a snow drift. We buy plants of this flower. They grow into large clumps as time goes by.

Chrysanthemums are our "good night" flowers for they are the last to bloom before everything goes to sleep. The hardy kinds are not as large as the huge fellows we see in the florists' windows, but are so cheery and spicy in perfume they are always loved. The little button "Chrisies" are universal favorites; you can have them in white, yellow, bronze and maroon; also some that are larger, in



BOLTONIA ASTEROIDES IS A GREAT FAVORITE, FOR ITS WHITE BLOSSOMS
IN AUGUST ARE LIKE A SNOW DRIFT

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pinks as well. We buy plants of these too, and the clumps increase in size each year.

If you want some vines and do not wish to sow seeds you can have these: *Cinnamon Vine* and *Madeira Vine*, which both grow from bulbs and have



WE HAVE SO MANY WONDERFUL CLIMBING ROSES! THESE ARE PINK
DOROTHY PERKINS—THREE YEARS OLD

very fragrant white blossoms. The Madeira Vine bulbs must be taken up when frost comes and stored in a cool dry place, but the Cinnamon vine is hardy.

Clematis is also a hardy vine. We buy the roots. There are large, single, fragrant white, purple, lavender, and red flowered kinds, also a small white

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star-shaped, very fragrant varieties which make such a bower of flowers that it has been called "Virgin's Bower."

Climbing Roses are loved by every one the world over and we have such wonderfully beautiful varieties it is hard to choose from among them. You can have single or double blossoms, and either white, pink, yellow or red. We buy a plant of these vines, setting it in our garden just as deep as it was before. I am going to give you the names of a few so you will have an idea which to choose.

- Dorothy Perkins..... pink, double.
- Dorothy Perkins..... white, double.
- Dorothy Perkins..... red, double.
- Gardenia.....yellow (like a greenhouse rose).
- Yellow Rambler.....yellow, semi double.
- American Pillar.....pink with white centre, single.
- Silver Moon.....pure white, single.
- Hiawatha.....red with a white center, single.
- Evangeline.....pale pink, single.
- Dr. Van Fleet.....waxy pink, double (like a greenhouse rose).

These are all hardy and grow very fast in most parts of our country.

Of all these plants and bulbs we have just talked about, the following are the only ones which need to be taken up over winter to prevent the roots or

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bulbs from rotting. These plants originally came from the tropics:

Gladiolus

Dahlias

Cannas

Tuberous rooted Begonias

Tuberoses

Madeira vine.

CHAPTER XXIV

FLOWER YIELDS

LET us figure a little bit about the amount of food and flowers our gardens will give us; first we will think about the flowers.

A Pansy Plant will give us two or three blossoms a day as long as the weather remains cool, and longer than that if we cultivate and water it well. If we have six pansy plants, each giving, say, two flowers a day from the middle of March to the middle of June, that would be 90 days and we could gather at least 1,080 blossoms.

Sweet Peas give us three or four stalks of blossoms a day for a month and near the sea coast for two months, so a dozen sweet pea vines would give us over 2,000 blossom stalks through their blossoming season.

Marigolds will have about 15 blossoms on each plant.

Asters about 10 blossoms each.

Balsam has its blossoms on a tall spike, a dozen

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blossoms to a spike, so six plants would produce 72 flowers, but this flower we seldom pick.

Calendula has a dozen blossoms apiece.

Celosia has about three spikes of blossoms to each plant. Six plants would give us 18 beautiful feathery blooms.

Centaurea has a dozen blossoms apiece.

Cosmos has as many as 36 blossoms to a plant so six plants would give us 216 flowers, surely a good many bouquets.

Dahlias have 30 blossoms each (if the weather is not too hot) and I have seen many plants produce 50—but we will consider 30 a fair number.

Gaillardia will give us as many blossoms as *calendula*, a dozen apiece.

Larkspur's blossoms grow on spikes also, and each plant will have five or six spikes.

Salvia has five or more spikes to a plant, so six plants would give us 30 spikes of scarlet gorgeousness.

Nicotiana's blossoms come on spikes also, but the blossoms are so large and so far apart that we will surely have to count them. A spike will have a dozen blossoms, one opening after another, and a half dozen stalks on a plant, so one single plant

FLOWER YIELDS

would give us 72 sweet-scented, white, star-shaped trumpets.

Scabiosa sends up about ten long blossom stems.

Sunflowers vary very much. The huge fellows usually have one blossom only, but the branching kinds have 25 blossoms or more.

Zinnias have a dozen blossoms each or 72 blossoms on six plants.

Candytuft often has ten blossom stalks on each plant.

Dianthus has 12 to 15 blossoms to a plant.

Mignonettes' spike of flowers come about six to a plant.

Petunias have frequently 20 blossoms each.

Nigella has 15 blossoms.

Poppies have about 6 blossoms on each plant but the plants are so small and grow so close together that a row four feet long of these flowers would produce 200 blossoms.

Eschscholtzia are the same as poppies.

Nasturtiums have as many as 30 blossoms on a single plant.

Phlox Drummondii's flowers come in clusters and we cannot count each separate flower (though it would be great fun if you want to do it). A plant has two or three stems of blossoms.

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Sweet Alyssum keeps blooming all the time and sends up so many flower stalks it is like the poppies.

Forget-Me-Nots have 50 stalks of flowers on a single plant, surely a generous bloomer.

Verbenas have 15 flower stems on each plant.

You know, of course, that your plants will not have this number of flowers if you allow seed to form. If you want this number you must pick each flower before it fades. Many of you will have a greater number of flowers than I have given if your garden grows well, and all of you I am sure will have more than a single plant of every variety. So all you have to do is multiply the number of plants you have by the number of blossoms on one plant and you can easily tell what your garden is yielding. Some flowers last only a day or so, but the plant makes many of them, while others produce only a few flowers which remain in bloom a long time.

Now for the vegetables. This tells us how much our garden will give us to eat. I will tell you how much a good plant will yield and you can multiply it by the number of plants you are growing. I hope each one of you will keep track of just how much you get of each kind of vegetable, because you can plan your gardens so much better next year.

FLOWER YIELDS

Radishes, Lettuce, Cabbage, Beets, Carrots, Onions and Turnips, of course, each produce just one vegetable to each plant so we have to divide the space between the plants into the length of the row to find out how much our garden produces. Let us



A GOOD VINE PRODUCES FROM TWELVE TO FIFTEEN CUCUMBERS

take radishes, and suppose our rows are 6 feet or 72 inches long. A radish every $\frac{1}{2}$ inch would give us 144 radishes. Carrots are three inches apart so we would have 24 carrots in a row.

Lettuce is 10 inches apart so we would have only 7 heads.

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Peas produce a pint to a quart of pods to a plant, according to the variety.

Beans (green and wax), a quart to a plant.

Bush Limas, a quart or more of pods to a plant.

Sweet Corn, two ears to most stalks.

Pop Corn, the same.

Swiss Chard, we keep thinning and cutting. The thinning we cannot count very well, but each plant will give you $\frac{1}{4}$ of a peck of leaves.

Squash have three to six on a vine.

Cucumbers have 12 to 15 on a vine.

Muskmelons have at least six on a vine (unless you are trying to grow extra large fruit, when you will have to cut off some to throw the strength into those that remain).

Watermelons, four, sometimes more, to a vine.

Parsley, 25 leaves to a plant.

Peppers, 10 to 12 to a plant.

Tomatoes, 30 good ones to a plant.

Peanuts, a quart of large and a pint of small Spanish to a plant.

Of course you understand this means care and cultivation, but the figures are not high. It means a summer's yield; we do not gather all the beans, or peppers, or tomatoes that grow on a plant in one day.

CHAPTER XXV

HOW TO PICK FLOWERS

I WANT to tell you the best way to pick flowers without hurting the plant and so they will keep fresh the longest time.

First of all *never break* a flower from the plant, always cut it. Why? For two reasons: First, in breaking a stem you are very apt to bend it also, then the water cannot rise; second, you are very apt to pull the plant and loosen the roots so that the whole plant withers or else has to spend time and strength mending roots when you want it to make flowers. If you cut the stem the water can rise to the flower, you can have a longer stem, and the plant is not hurt.

Let us see how the flower was fed before we cut it: The roots took food and moisture from the ground, turned it into sap and pumped it up to the flower through the stem. When we cut the flower stem there is nothing now to pump the sap up to the flower, but we are going to put the stem in water, and that great force of nature we have al-

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ready talked about, "Capillary Attraction," is going to send the water in the vase up to the blossom—but if the stem is injured or bent or dried, Capillary Attraction cannot send the water up and the flower soon withers.

If you notice the stem of every flower you see, whether you are a flower gardener or a vegetable gardener, you will learn much from them. Some stems are a hollow tube and the sap can rise easily—pick the first dandelion you see and examine it; others are hard and woody and the sap flows just under the bark—look at an apple or peach blossom. The flowers which have soft hollow stems can get the water from the vase very easily but they are also very easily bent and broken. The flowers with a woody stem do not get the water so easily and we have to make a special effort to keep them soft. So we put them first into very hot water for a few minutes and then into cool water. The hot water softens the stem and is a pump to start the water rising; then we put the flowers into cool water and it goes on rising.

The only proper time of the day to pick flowers is in the early morning, because the plant has been cooled off by the night air and has rested in the dark. But after the sun gets high the roots are

HOW TO PICK FLOWERS

pumping hard and the plant is working hard to make seed.

Never forget that a plant's entire life is spent in trying to make seed. The beautiful colors and odors



SWEET PEAS SHOULD BE PUT INTO COOL WATER. THEY NEED SOME DAINTY FOLIAGE TO BRING OUT THEIR BEAUTY

of the flowers are not for us but for the bees and insects and ants and humming birds and hawk moths. The plant wants these creatures to come and get the honey so they will spread the powdery

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pollen and fertilize the baby seeds at the base of each flower. If we cut the flowers from the plant the plant makes new flowers to get some more seeds; if we leave the flowers to go to seed the plant's work is done and it will give us no more bloom. So you can easily see we must keep our flowers picked if we want our garden to keep on blooming.

Now I am going to tell you how to cut each variety we have already talked about. Don't forget you are going to get up early enough to tend to your gathering before breakfast.

Asters have good long stems and they should be cut as long as you can get them—the stem is woody and should be put into hot water for 5 minutes, then into cool.

Balsam has a soft open stem and can be put into cool water.

Calendula has a fine long woody stem, hot water first.

Calliopsis, the same.

Celosia is such a queer flower; it grows quite a way down the stem, so you have to pick nearly the whole plant. Usually they are left in the garden for they do not fade for a long, long time. If you do pick them, put them into hot water first for five minutes, then into cool.



JAPANESE FLOWER HOLDERS MAKE FLOWER ARRANGING EASY. THIS IS A FOURTH OF JULY BOUQUET, FOR THE ROSE IS RED AND THE IRIS WHITE AND BLUE

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Cosmos, the same.

Dahlias need hot water more than any other flower. They should be put for ten minutes into water that has been boiling, then into cool water.

Gaillardia needs hot water first.

Larkspur does not need hot water.

Marigolds need hot water but will do very well without it.

Nicotiana does not need hot water, but

Salvia does.

Scabiosa also needs hot water.

Zinnias do too, but they will get on very well without it.

Candytuft needs hot water, though we seldom pick it.

Dianthus does not need hot water.

Neither do *Petunias*, *Nigella*, *Poppies*, *Nasturtiums*, *Phlox Drummondii*, *Pansies*, nor *Sweet Alyssum*.

Forget-Me-Nots want cool water; also *Verbenas* and *Sweet Peas*.

Now about arranging the flowers after they are cut. Be careful of two things, do not let the colors clash, and do not have too many in a vase. Each flower is so pretty and has so much to say to us, we do not want to crowd it so it cannot show us its

HOW TO PICK FLOWERS

beautiful form. Put a few flowers in one vase with plenty of green about them, for we never see flowers out of doors without lots of green. Grasses, branches of trees, leaves from some of the plants, are all good,—keep your eyes open for good greens. Asparagus is beautiful and feathery.



PANSIES ARRANGED IN MOIST SAND LOOK AS THOUGH THEY WERE GROWING

You are wondering how you can arrange a few flowers without their tumbling out of the vase. There are several ways—one is to put some square mesh wire across the top of the vase, and pass the stems through the openings. Another way is to put sand into the vase; wet it just enough so the flowers can stand up in the sand. They will look as though they were growing. Still another is to have

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some of the Japanese plant holders for the bottom of the vase. Some are made of metal, some of china. They come in different shapes with different sized holes for the stems.

You will find a bowl shape much better for short stemmed flowers and tall vases better for long stemmed flowers.

There is no end to the combinations of flowers you can use and the ways you can arrange them. This part of the gardening is one of the most enjoyable and calls for the most cleverness.

Now let me tell you about the flowers we get from summer bulbs and plants.

I have already told you how *dahlias* need hot water.

Gladioli should be picked when the first bud opens, which is the one lowest down on the stem. They do not need hot water as the stem is very open. You will find all the buds on the stem will open one right after another in the house, so they last several days. Give them fresh water every day.

Montbretias and *Tigridias* you can treat the same as *Gladiolus*.

Caladium we do not pick, neither do we often pick *Calla Lilies*, but they do not need hot water if we do pick them.



PLACING DAISIES AND CLOVER IN WATER TO "FRESHEN UP" BEFORE
ARRANGING THEM IN VASES

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Hyacinthus Candicans should go into cold water, as should *Tuberoses*.

Cannas we do not consider a picking flower.

Tuberous Rooted Begonias are very brittle of stem; if you pick them handle them very gently and put them into cold water.

Hemerocallis and *Liliums* both need cold water; also

Tritoma, *Funkia* and *Spider Lilies*.

Hardy Phlox should be picked when the first blossoms begin to unfold and put into hot water for five minutes, then into cold.

The same is true of *Platycodon*, *Hardy Asters* and *Chrysanthemums*.

Madeira and *Cinnamon Vines* are not picking flowers.

Clematis and *Climbing Roses* should go into hot water first for five minutes, then into cold.

Of all these flowers, dahlias, gladioli, tuberoses and liliums, roses, hardy asters, and chrysanthemums are the best picking flowers; the rest look better when left in the garden.

You will notice that nearly all flowers wilt when you first put them into water, then slowly come up when "Capillary Attraction" gets to work. Therefore it is wiser to put your flowers into water and

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leave them a little while before you arrange them. If, however, you can put them immediately into water before they wilt the least bit, hot water may be omitted except with dahlias, which always respond wonderfully to this treatment.

CHAPTER XXVI

HARDY FLOWERS

IF you have a flower in your garden that you are very fond of, would you like to have it come up next spring all by itself without your having to sow seed again? And would you like to have it come up year after year and grow into a larger plant each year?

I can hear a whole chorus of, "Oh, yes!"



A HARDY FLOWER GARDEN

HARDY FLOWERS



HARDY LARKSPUR GROWS MUCH TALLER THAN THE ANNUAL VARIETY, AND AFTER A FEW YEARS FORMS LARGE BUSHY CLUMPS

Well, some flowers do just that very thing, and the reason we call them “hardy” is because they go to sleep in the winter but do not die. You can have

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some hardy flowers in your garden if the garden is to be yours for some time, but if you have a garden that is to be yours only for this year, then I should not advise you to start the hardy varieties. You can have annual flowers among the hardies, if you wish, so you need not feel you have to give up your favorite annuals.

Have you grown very fond of Larkspur? You can have a hardy kind if you want. It grows much taller than the annual and will grow into a big bushy clump after a few years. They come in many shades of blues, and white, the blossoms on the spikes are so large that the centers (which are dark brown or black) look like bees.

Perhaps you have grown fond of Phlox and would like to have this for a continual garden friend. Hardy phlox grows much taller than the annual phlox *drummondii*; the heads of bloom are larger than a baseball; you can have them in almost any color, red, pink, white, purple, striped, shaded and with centers of a contrasting color. Then there is a variety that creeps close to the ground and is very beautiful for the edge of gardens.

Hardy Asters are quite different from the asters you planted in the spring. The blossoms are very small, but so many of them grow on a single stem

HARDY FLOWERS

that they make a bouquet all by themselves. They come in almost every shade of violet, rose and white. Some varieties are short and feathery, others grow very tall, 4 or 5 feet, and have large leaves and heavy stems. They bloom late in summer and early in autumn just before the chrysanthemums open their cheery buds.

You can grow Chrysanthemums from seed too if you wish and they hold many surprises because you are liable to have some shapes and colors you have never seen before. I think I have had more fun with Chrysanthemums from seed than from any other flower. Once I had every shade of yellow from cream color to mahogany, and every shade of pink from blush to crimson.

Perhaps you have loved the Dianthus better than any other flower. Well, there is a hardy kind, too, called garden pinks. The plants spread out like a carpet and the perfume when they bloom is like spices of Araby. You can have single and double flowers, and several colors. Another kind of Dianthus is called "Sweet William." The flowers grow in clusters on one stem instead of singly. They are not as fragrant as the garden pinks, but very beautiful.

Do you know the Wild Columbine? It is such a

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dainty flower, perched on the end of a slender stem and swaying in every breeze. The Eastern wild fellow is red with a yellow center, but we now have many other shades—blue and white, lavender and yellow, shell pink, cream color, plum purple, single and double flowers; flowers with spurs curled inward, and flowers with such long straight spurs they look like airships.

You may know the Wild Lupine. It grows along the railroad tracks to cheer travelers, I am sure. You can have them in blue, or white or rose. Their leaves are particularly pretty, shaped like pin wheels, while the flowers are somewhat like tiny sweet peas growing on tall spikes.

Tufted Pansies or Violas, as they are also called, come up year after year; they make a little bush the shape of a bowl upside down, and are covered with small pansy faces. Real pansies will live over the winter if you throw a blanket of leaves or mulch over them when cold weather comes.

Gaillardia is called blanket flower, though I could never tell why. They are bright sunflowery blossoms, and grow strong and tall.

Gypsophila is also called "Baby's Breath"; that, I am sure, is because it is so delicate. It has the



COLUMBINE BLOSSOMS ARE LIKE TINY AIR SHIPS SWAYING IN EVERY
BREEZE

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tiniest white blossoms on slender graceful stalks, and one of the loveliest of flowers.

Do you love *Salvia*? You can have hardy varieties, but not in red—only in shades of blue. It is very pretty, however, and some grow much taller than the red annual variety.

Possibly Poppies have been your favorite flower. I almost hesitate to tell you about the hardy kinds; they are so wonderful you would scarcely believe me unless you have already seen them. Great flowers as large as a saucer, with petals which look as though they were made of tissue paper. They grow on stiff stems and the leaves are hairy. The plants grow larger each year, and I have had some three year old plants with 45 buds on them. They come in so many shades: orange, scarlet, crimson, mahogany and many shades of pink, some with spots of a different color at the base of the petals, and some with tufts of black stamens, others with white.

Campanula or Canterbury bells are one of our loveliest hardy flowers. Each blossom on the tall spike is a perfect bell. Some varieties are called cup and saucer because there is a frill around the base of the bell which makes it look as though it were a cup standing in a saucer. They come in shades of blue, and pink, and white and lavender.



ORIENTAL POPPIES ARE SO WONDERFUL THEY ALMOST TAKE YOUR
BREATH AWAY

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There are so many hardy flowers you may have that it would take a book to write about them all and I have not space enough to tell you.

There are still other flowers which are hardy



HARDY DIANTHUS, CALLED "GARDEN PINKS," IN THE FOREGROUND. LARGE RIBBED LEAVES OF FUNKIA WITH PEONY BLOSSOMS IN THE BACKGROUND. NO WONDER THIS LITTLE GIRL HAS STOPPED TO ADMIRE!

through one winter for they bloom the following summer, then die.

Digitalis, also called Foxglove, is one of these. The wonderful trumpet-shaped flowers grow on tall spikes, while the leaves are large and deeply veined. They have purple, pink, yellow and white blossoms.

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Hollyhock is another flower which blooms after one winter in the garden. They are one of the tallest flowers we have and their rose-like blossoms come in nearly all shades except blue. There are double and single hollyhocks; both dear friends.

No doubt you are wondering why in the world I am telling you about these plants so late in the season. It is because fall is the time to sow the seed of these plants. August and September are the months when they do best. Make a fine seed bed in some corner where it is shady part of the day and sow your seeds just as you did in the spring when you were sowing annuals. Be sure the ground is well worked up and the soil fine. After the seeds are sown keep them well watered (but not too wet), and if you must plant them where it is very sunny, spread a newspaper or some branches with leaves on them over the seed bed every day, but remove it at night so the dew and cool air can reach the soil. When the seedlings come up, take the covering away and cultivate carefully. Thin the seedlings out so you will have strong plants, and remember these plants will grow large so you will not need many of each variety.

When the seedlings are about two inches high, transplant them to the place where you wish them

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to remain. Look over your garden carefully, study again just how the particular plant is going to grow, then when you have decided upon the spot, dig a hole for the seedling, put some humus in the bottom, and fill it with water. Next take up the seedling as carefully as possible so as not to disturb the roots any more than you can help, place it in the new hole, draw earth around and press firmly.

Three hardy or perennial flowers will be enough to start with. Suppose you choose Larkspur (also called Delphinium), Oriental Poppies, and Columbine (also called Aquilegia). These are three very different types of flowers, are very showy, and start easily from seed.

There is one thing I must caution you about, and that is a few of these plants are poisonous. From foxglove a strong heart stimulant is made and from Oriental poppies opium is made. Be sure they never get near your mouth and watch small folks carefully if you have these plants in your garden.

There is one hardy flower I am very anxious some of you should have. We do not get it from seed as a rule, but by dividing the plant roots. This flower is the Iris, named for the rainbow, because it comes in so many shades. Perhaps you know them by the name of Fleur-de-lys or Flag. They

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bloom in May and June, and are tall and stately. The plants increase in size so rapidly that they are a great delight. I have seen some four year old plants to-day, as big as a wash tub with dozens and dozens of blossom stalks. Each flower is like an



IRIS BLOSSOMS ARE LIKE ORCHIDS. THIS IS A DWARF VARIETY, THE FLOWERS AS BLUE AS FORGET-ME-NOTS

orchid—that rare flower that grows in the tropics—and some of them are very fragrant. These plants should always be set in the garden in the fall, because they are getting ready to bloom in the spring. You can buy a plant for 15 cents and it will give

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you and your neighborhood more and more pleasure each year.

Hardy flowers need lots of humus, so be sure to put some in the hole under the roots and a mulch of humus on top around the stem.



THE DUTCH BULBS LIVE FROM YEAR TO YEAR, SENDING UP THEIR BLOSSOMS IN THE EARLY SPRING TO GLADDEN OUR HEARTS AND EYES. THESE ARE THE JOLLY DAFFODILS.

If you start a few hardy flowers this year, some different ones next year, and so on, you will soon have a wonderful collection that will give you untold happiness.

We must not forget the Dutch bulbs in our hardy garden though we do not plant them until late

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fall. But you want to plan for them because they will give you flowers long before the other varieties begin to bloom. The Snowdrops come up through the snow! Even Crocus peeks from a snow blanket! Then come Hyacinths, Tulips, Daffodils and Narcissus, all so gay and fragrant, and best of all living from year to year making more bulbs to give more blossoms.

Plant the large bulbs quite deep, as deep as your hand is long or even deeper, and the small bulbs (like Snowdrops and Crocus) about as deep as the length of your fingers. My friends who have clay soil gardens should put a little sand at the bottom of the hole before they drop the bulb in; this is to keep too much dampness from the bulb and prevent rot; water goes through the sand, you see, so we call this drainage.

The greatest happiness in a hardy garden is to have some plant blossom each month, and there is never a time when your garden is flowerless. The Dutch bulbs start the ball in the early spring. Put them in anywhere you like among the hardy flowers. They are gone before June and finally die down so that when fall comes it is impossible to tell where they were.

Let us plant a garden so it will bloom each month.

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I must plan it where I live and you can see how it compares with your home. The names which have a star I choose for my garden the first year.

March	*Crocus, snowdrop, scilla.
April	Hyacinth, *tulip, daffodil, creeping phlox

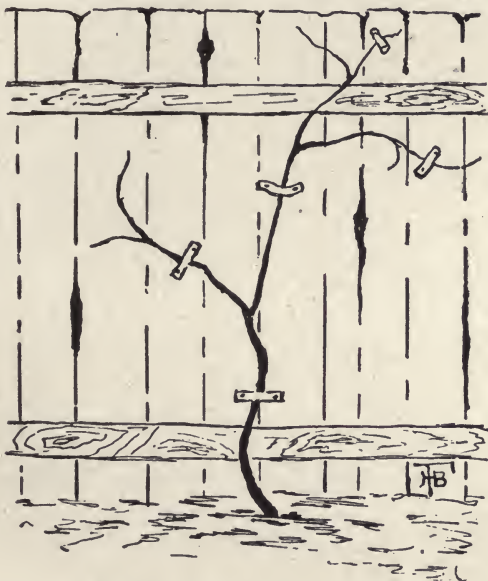


PHLOX SUBULATA, CALLED ALSO CREEPING PHLOX AND "MOUNTAIN PINK," IS A SPLENDID EDGING PLANT; ESPECIALLY THE WHITE AND LAVENDER VARIETIES.

May	*Iris, columbine
June	Garden pinks, *Oriental poppy, larkspur
July	Canterbury bells, *hollyhocks
August	*Phlox, lilies
September	Larkspur again, blue salvia, *hardy asters
October	*Chrysanthemums

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It is very easy to choose from these and prolong your garden's beauty. We cannot only add different flowers each year, but different colors of the same flower. Let us suppose my first Oriental Poppy was red, some other year I could add a pink,



A ROSE BUSH "TAPED" TO A BOARD FENCE

again a white or rich red, and so on through the whole list.

Here are a few suggestions for vine supports:

Suppose you live in the city where you cannot get poles or young trees, then you can use bamboo fishing poles; they cost a few cents and are good

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for several years. We have had a rose arbor of them for five years and many of the poles are still perfectly good. You can buy fishing poles in various lengths, from 6 to 14 feet. If you buy the



MANY OF OUR CLIMBING ROSES HAVE BEAUTIFUL RED HAWS TO BRIGHTEN THE WINTER LANDSCAPE. THIS IS THE AMERICAN PILLAR IN WINTER TIME AND SHOWS HOW THE BAMBOO FISHING POLES ARE FASTENED TOGETHER.

long ones you can use the heavy part for the uprights, cutting off the slender ends and using them for the cross pieces.

Our flower vines can be given poles, trees, wire, fish net or strings to grow upon; the hardy vines, like Clematis and Roses, need a strong support for

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they grow very heavy as they grow older. If you are training them on a board fence, as I have no doubt many of my city friends must do, a piece of tape laid across the stem and tacked each side will keep the vine in the position you wish it.



AN AMERICAN PILLAR ROSE ON A BAMBOO FISHING POLE SUPPORT

A single stake is enough for Dahlias, Hardy As-
ters, and other tall flowers if they need a support. Tie a string to the stake near the ground, then take the ends around the main stem of the plant and back again around the stake. Do not draw them too close together; allow the plant some freedom. Put as many strings up the plant as it seems to require,

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but do not over-do the matter. These supports do two things, they keep the plant off the ground, also help it grow in its natural position, and they keep the wind from working the roots loose in the soil. A plant that is continually thrashed backwards and forwards by the wind is given extra work to do for the tiny feeder rootlets are broken off.

Sometimes Lilies, Dahlias, Gladioli have to be supported, but if they are planted deep enough they are usually able to support themselves.

If your supports are good keep them from year to year, tie them in a bundle in the fall, and put them away with your garden tools.

One of the very nicest supports for annual vines that I know of is the Christmas tree. I must tell you a little story of the first one we used. We had just moved out of the city and had our first wee garden, so of course the neighbors thought we did not know much about gardening and were very glad to help us by gazing over the hedge and telling us what to do and what not to do.

One spring day we planted the Christmas tree, which we had carefully saved, right in the middle of one of the garden beds. The neighbors soon came to tell us it would not grow as it had no roots. We smiled and said, "Oh, yes, it will bloom in the mid-

HARDY FLOWERS



A CHRISTMAS TREE MAKES A SPLENDID VINE SUPPORT

dle of the summer." They hurried away so we would not see them laugh. "Whoever saw a tree without roots grow, and whoever saw a pine tree bloom! They certainly must be crazy," they said.

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If they had stayed a little longer they would have seen us carefully planting climbing nasturtiums around it, but they did not, deciding to let us alone, for there was no use in trying to help crazy people. Later in the season they came again to see what



THE CHRISTMAS TREE IN BLOOM!

other queer things we had done and, lo and behold, the Christmas tree was in bloom; just covered with bright red, yellow and orange bells! They did not say anything about Christmas trees and, indeed, did not offer us much advice after that, but it was wonderful how many Christmas trees bloomed in that neighborhood the next summer.

CHAPTER XXVII

PATHS, EDGES AND COMPOST

PERHAPS the paths through or around your garden are looking a little bit shabby and need fixing up. If so run your garden line or string along the edge of your beds just as you did when you first laid out your garden. Make a shallow mark under the line with your spade, then take out anything growing in the paths either with a knife or the corner of your hoe,—but do not dig large holes or your path will become soft and uneven and hold pools of water when it rains.

If the path is lower than the beds (and it is very apt to be because you have walked on it so much), it naturally holds water, so we arch or crown the path a little bit by scraping the earth from the sides toward the center. This little drawing will show you how your beds and path should look if you lay down and looked across them at the ground level.



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You see we have made a line at the edge of the beds, now we gently scrape the earth from this line toward the center with a hoe until we have the center of the path higher than the edges. Next tramp it hard, then rake neatly and you have a gutter on



SCRAPE THE EARTH FROM THE EDGE OF THE PATH TOWARD THE CENTER;
THIS FORMS A GUTTER WHERE THE RAIN WILL GO

each side of the path where the next rain will go. Nothing spoils the pretty appearance of a garden more than grass and weeds in the paths. It is quite a little work to keep them clean and here is another reason why I advise you to choose a small garden.

If your garden is along a hedge or a fence, you will not have a path to keep clean, but you will

PATHS, EDGES AND COMPOST

probably have a grass edge to keep neat. Run your garden line along the edge just as you did when you first laid out your garden, then cut under the line with a sharp spade or an "edger," which is a sharp tool the shape of a half moon. Be sure you cut all the way through the grass roots. Now lift the line and take out all the grass and grass roots that are on the bed side of this cut line. Once in several weeks is usually often enough to do this, but you see the soil in your garden is so nice and mellow and tempting the grass will always be creeping toward it.

If you have made a compost heap of weeds and grass cuttings, and vegetable tops, turn it over so as to help it decay to make good humus for your garden next year. When you lift a fork full turn it over as you put it down; shape the pile up neatly, then drench it with water as moisture greatly helps decay.

If you have vines on your compost heap to cover its unpleasant appearance, you cannot, of course, turn the pile over, but you can wet it down thoroughly. Be sure and turn the compost which has been covered as soon as the plants growing on it died in the fall. You not only want it to decay, but you want to turn out any insects which may

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be hiding for the winter. If it is possible to turn your compost very late in the fall be sure and do so, and again just as early in the spring as you possibly can, for nothing helps more to rid your pile of insect pests than frequent turnings. Insects do not like to be disturbed and many kinds are easily frozen if they are exposed. My Southern friends will not have frost to help them, and some of my Northern friends will have a snow blanket to keep the bugs warm and cozy, so keep it in mind that you are going to turn them out of their snug nests whenever you can.

CHAPTER XXVIII

SMALL FRUITS

OF all the lovely fruits for a small garden, strawberries are the best, because they are not only beautiful and good to eat, but you do not have to wait long for the plants to bear. August is the best time to set out the plants and as they need a lot of humus in the ground, you can prepare a place for them before the plants arrive. You can set the berry plants among the garden plants already growing without doing any harm; they can be placed in a row, or between rows.

Make holes one foot apart. Put some humus in the bottom of each hole, a little soil on top of the humus and then set the plant so the crown is *just level* with the surface of the ground. Many strawberry plants have died because the crown (or heart) was buried. If your plants come from a nursery, you will find them tied in bunches with the dirt all washed off the roots which are long and hairy. Take the scissors and cut them off so about three inches of the root remains. Spread the roots out

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in a circle when planting and press the earth firmly over them. If the ground is real dry fill the hole with water before setting the plant; then be sure to cultivate in two days, or give each plant a mulch of grass or straw when you set it, to prevent the earth baking and the soil moisture escaping. If the plants come from the neighborhood, dig them so the earth remains on the roots, then you do not have to do any cutting to the roots. Plant carefully, being sure to keep the crown level with the ground. Take good care of the plants this fall and when the ground becomes frozen, cover them with hay or straw or salt hay (which is the best of all) to keep the frost in the ground and prevent the plants being lifted out by alternate thawing and freezing.

Strawberries have two kinds of children: plant children and seed children. You see Mother Nature is not going to run any risk of strawberries becoming extinct so she provides two methods of continuing the plant. The seeds of course are on the berry, but the plant sends out many stems with leaves on the tips. These take root just under the leaves and form a new plant just like the mother plant. We call these "runners" and use them because they grow fast, but chiefly because we want to be sure of the variety. As they are part of the original plant,

SMALL FRUITS

we are sure it will have the same kind of fruit.

If we planted seed we might get many different kinds of berries, because the bees had carried pollen from different varieties of strawberry flowers and they have "crossed." Next spring the plants you set out this August will make runners, then we call the original plant a "Mother Plant." You will have to be very careful of these runners or they will root where you do not want them and there may be many more runners than you need in your garden. Place those you do want and fasten them with a hairpin or put some earth on the stem to hold it in place, then cut off the rest. The nicest way to arrange the runners is like the sketch, one Mother plant and four runners. These will fill up the row so you will have a solid line of strawberry plants. This is called a "narrow and matted row."



The large plants are Mother plants, the small ones, runners. This drawing shows you how to place the runners.

In the spring push the hay cover away from the crown of the plant and as the weather grows warmer tuck this covering under the plant and arrange it so

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it will cover the ground, then your berries will have a mat on which to lie and you will have clean, instead of dirty, gritty berries. Salt hay makes the nicest mat because it is so fine, soft and pliable, does not rot quickly or get moldy and is free from weed and grass seeds.

Strawberries are queer in one respect: some varieties have perfect flowers, others imperfect flowers; this does not mean that the shape is imperfect, it means that they have only the mother part of the flower; there are no stamens with pollen to fertilize the seeds. If you should choose a variety that had no stamens you would have to plant a few of a variety that had stamens so the seeds could be fertilized and the berry ripen. Therefore be careful in choosing your berries to notice whether they are perfect or imperfect varieties. The most beautiful and finest flavored strawberry I know is named "Chesapeake" and its flowers are perfect.

Currants and Gooseberries are also fine for small gardens. The bushes live many years and the fruit is delicious when fully ripe. We buy young bushes, and the holes where they are to be planted should have humus in the bottom, and the earth you take out of the hole should have wood ashes mixed with it before you pack it around the roots. The humus

SMALL FRUITS

feeds the plant, and the wood ashes help to keep the borers away from the stem as well as to sweeten the soil. Their enemy is the currant worm which feeds on the leaves of currants and gooseberries and can eat all the leaves on a plant in a very short time. As soon as the leaves are open, spray the bushes with Arsenate of Lead, then when Mr. Currant Worm arrives his poison will be waiting for him. Gooseberries also have a mildew, so we spray with Bordeaux as well as Arsenate of Lead. You can put one spray on as soon as the other has dried or you can buy the two poisons already mixed. Then one spraying will both poison the insects and prevent mildew.

These bushes grow quite large, so give them plenty of room—about five feet. The blossoms and fruit grow on branches one year old. Each year new stalks come up from the ground, grow all summer and have fruit the next year. The branches that have borne fruit should be cut out after two years and the younger branches allowed to take their place. You can grow red and white Currants and American and English Gooseberries. The English Gooseberries look like tiny trees, and the berries are larger than the American varieties. Re-

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member, their greatest enemy is mildew, so spray early to prevent it; it cannot be cured.

Raspberries are also easily grown. Plant them the same way except that they do not need wood-ashes for they prefer an acid soil; place them four feet apart and spray with Bordeaux when the leaves open. There are black, red, and yellow Raspberries and the fruit comes only on new wood. As soon as you have gathered your berries, cut out completely the branches that bore fruit. Then all the strength of the plant will go to making strong branches for the next year's crop.

A grape vine is one of the nicest plants to have. Give it a wire fence to grow on, let us say $4\frac{1}{2}$ feet high, and train it so there will be a straight trunk and four side branches, two lower and two upper. Each winter cut the branches back so only a few buds remain, for the grapes grow on new wood. A grape vine will live as long as you do so it can become a real true friend. Choose a variety that you are fond of; put some humus in the hole when you plant it and a winter covering of humus on top each fall. If the grapes have a mildew in your part of the country, spray with Bordeaux just as soon as the blossoms fall and you can see the tiny grapes.

Other long lived friends are dwarf apple and

SMALL FRUITS



A DWARF PEAR TREE THE SPRING AFTER IT WAS SET IN THE GARDEN

pear trees. They never grow large because they have been grafted to the root of a tree which never grows tall. Grafting is very interesting because it helps us get the kind of fruit we want and be *sure* of it. You know that plants from the seeds of fruit

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seldom give us fruit like themselves because the bees and insects have mixed the pollen of many varieties; so, if we have a kind of fruit we like very much, we take a branch of that tree and fasten it into another tree. It is placed carefully and bound tightly. The cut heals over, then the roots send sap to the new branch and it has fruit just like its mother tree, not like the tree that is sending sap to it.

It is queer that the sap does not change the branch but very fortunate for us that it is so. Suppose we want a dwarf Winesap Apple. The nurseryman takes a branch from a good Winesap tree that bears fine fruit and fastens this (or grafts as we call it) to a seedling dwarf wild apple which he knows will never grow tall. The "scion," as the grafted branch is called, is fastened to the seedling a few inches from the root, and as the tree grows you hardly notice where they were joined. The branch of the Winesap soon knows it is growing on a dwarf root and it says to itself:

"Goodness me, I am never going to be big, because this root does not send me enough sap to make me grow tall, so I will have to hurry up and make fruit for I am not sure just what this root is going to do. And, goodness me! If I am going to be

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small I cannot have as many apples as I would if I could grow 40 feet high, so I will make my fruit very large and handsome." And the little chap goes right to work making fruit, and in a couple of years you will be gathering apples.

Dwarf pears are produced by grafting a scion from any good pear tree on to the root of a quince tree; you know quince trees never grow very large.

You need not plant these in your vegetable garden if you do not want to, as they can be used instead of flowering shrubs. Fruit blossoms are as handsome as any blossoms, and the little trees are very ornamental when the fruit ripens.

When you plant dwarf trees do it with the utmost care because they will live half a century. Make a large hole at least three feet across and two feet deep, put humus of some kind in the bottom of the hole and tramp it down hard; next put a couple of inches of soil over the humus, then mix wood ashes with the remainder of the soil. Now unpack the tree and see that there are no broken roots. If you find any broken, cut them off clean, because the plant will try to heal a broken root, but will send out fine feeder roots if it is cut off clean.

Put the tree in the center of the hole and spread the roots out just as they go naturally, hold the



A THREE-YEAR-OLD BOY, A FIVE-YEAR-OLD PEAR TREE AND A SIX-YEAR-
OLD PUSSY CAT

SMALL FRUITS

trunk upright, and put half the earth over the roots, then pour on a bucket of water—this does two very important things, moistens the soil and the humus under the roots, and carries the soil down among them, filling every crevice and forcing out any air. When the water settles see that the tree is about the right depth so that when the hole is filled and the ground leveled it will be just a little deeper than it was in the nursery. You can easily tell by putting your head down and looking across the ground level. If the tree seems too deep pull it up gently and jounce it a little bit to work the soil in among the roots again. Now you can put in all the rest of the earth and tramp it down hard. Spread a good deep mulch on the ground over the entire hole, and your little tree will be glad it has come to live in your garden.

If you wish to plant an orchard the trees should be set 10 feet apart. You can have many varieties of apples and pears on a small piece of ground.

If this little book has helped you “Pack up your troubles in your old kit bag,” everybody is happy.

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